

Stormwater Management Report and Stormwater Pollution Prevention Plan

for

Canisius High School – Robert J. Stransky Memorial Athletic Complex
Phase Three Development Project

at

2885 Clinton Street ▪ West Seneca, NY 14224 ▪ Erie County ▪ NYSDEC Region #9



Date:

April 2021 – Revised May 2021

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SECTION 1 - SCOPE

A. PURPOSE

This Storm Water Pollution Prevention Plan (SWPPP) presents written and graphical results of our analysis for addressing Erosion and Sediment Control, Storm Water Quantity and Storm Water Quality as required by the New York State Department of Environmental Conservation regarding compliance to the Stormwater Discharges Associated with Construction Activity under State Pollutant Discharge Elimination System General Permit No. GP-0-15-002. This SWPPP is prepared in accordance with the requirements of Article 17, Titles 7, 8 and Article 70 of the New York State Environmental Conservation Law.

The design standards and practices outlined herein are in accordance with the NYS Standards and Specifications for Erosion and Sediment Control and the NYS Stormwater Management Design Manual. These manuals provide the project designer a general overview on the sizing, design, selection and location of stormwater management practices.

The NYSDEC requires the project to address five (5) parameters associated with stormwater; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (CPv), Over-Bank Flood Protection Volume (Q_{10}) and Extreme Flood Protection Volume (Q_{100}). The SWPPP functions as a plan for controlling runoff and pollutants from a site during and after construction activities, to protect water resources from stormwater impacts.

Water Quality Volume (WQv): The NYSDEC's requires the collection and treatment of 90 percent of the average annual stormwater runoff volume or the enhanced phosphorus removal rate depending on the location (WQv) in order to reduce the amount of pollutants found in the waters of New York State.

Runoff Reduction Volume (RRv): The NYSDEC's requires reduction of the total Water Quality Volume (WQv) by applied green infrastructure techniques and stormwater management practices to replicate pre-development hydrology. (RRv) can be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100 percent of the post developed water quality volumes.

Channel Protection Volume (CPv): Water courses, including rivers, streams and swales can be adversely affected by development activities in upstream areas. An increase in the amount of runoff during frequent storms can result in erosion. In order to protect stream channels from erosion, the Stream Channel Protection Volume (CPv), is detained and released over a period of 24 hours. This is referred to as extended detention. The channel protection volume is defined as post-development stormwater runoff generated during the 1-year, 24-hour storm event.

Over-Bank Flood Protection Volume (Q_{10}): Design activities can alter flow criteria leading to channels without adequate capacity. In order to prevent the over-bank flooding after development occurs, NYSDEC guidelines require that stormwater management practices be designed to attenuate peak discharge rates such that the post-development rates do not exceed the pre-development rates during the 10-year, 24 hour storm event.

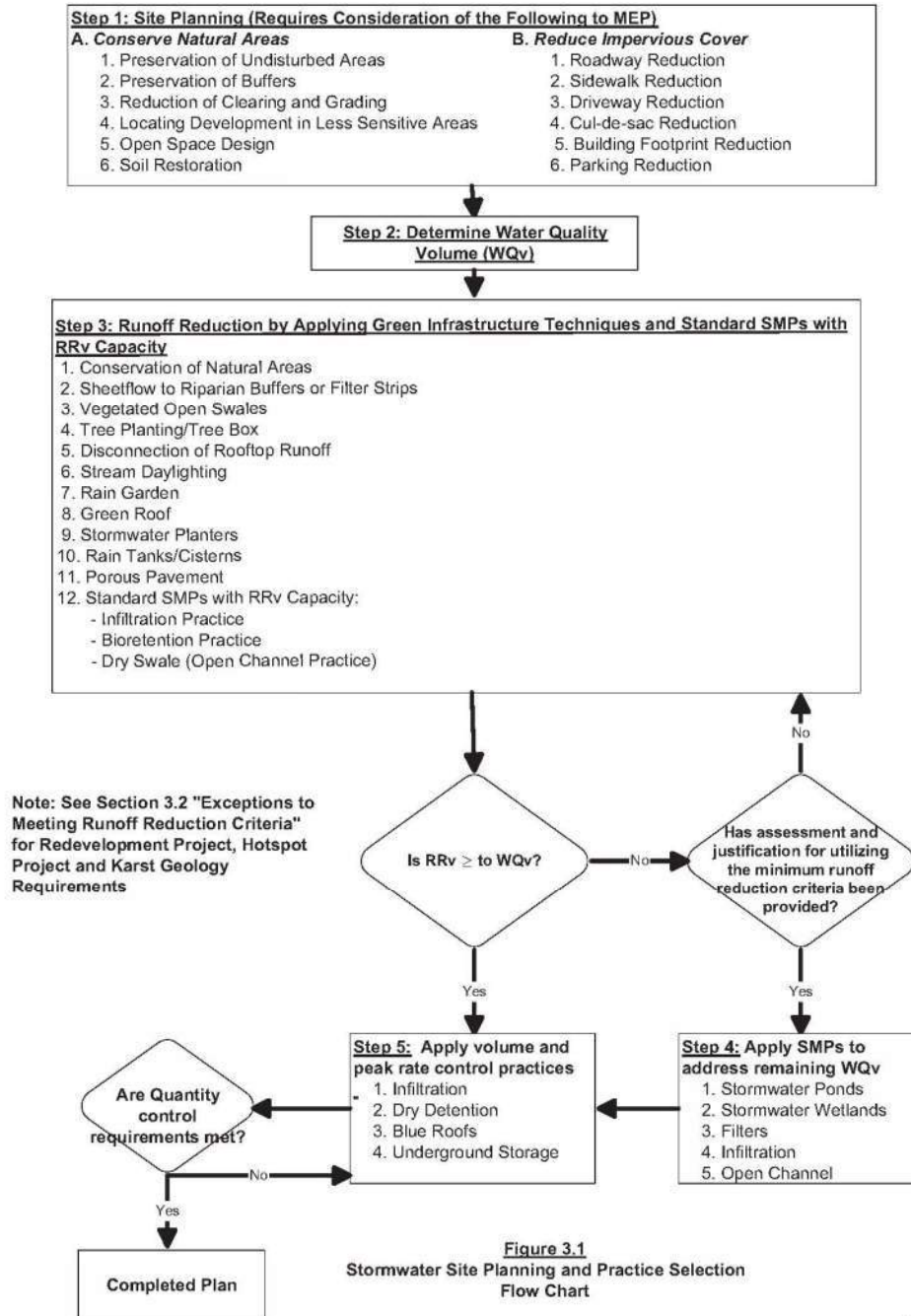
Extreme Flood Protection Volume (Q_{100}): The NYSDEC requires that a stormwater management system capture the runoff from a project site and attenuate the flows so that the post-development peak rates of runoff during the 100-year, 24 hour storm event do not exceed the pre-development peak rates of runoff. Systems that mitigate the 100-year event prevent the increased risk of flood damage from large storm events and maintain the boundaries of the pre-development 100-year floodplain.

These parameters are approached in a five (5) step process, as described by the NYS DEC, which involves site planning and stormwater management practice selection (see Figure 3.1).

1. Site planning to preserve natural features and reduce impervious cover.
2. Calculation of water quality volume (WQv) for the site.
3. Incorporation of green infrastructure techniques and standard stormwater management practices with RRv capacity.
4. Use of standard stormwater management practices, where applicable, to treat the portion of WQv not addressed by green infrastructure techniques and standard stormwater management practices with RRv capacity.
5. Design of volume and peak rate control practices where required.

New development projects require volume and peak rate control practices to control the 10 and 100 year storm peak discharge rates to predevelopment rates. This requires storage with controlled outlets to meet the design criteria. These control practices are in addition to CPv , RRv, and WQv requirements. Green infrastructure practices are incorporated to meet RRv requirements as well as contributing to WQv to reduce the amount of pollutants released off site.

Redevelopment projects are to follow an approach between maximizing improvements in site design that can reduce the impacts of stormwater runoff and providing a maximum level of on-site treatment that is feasible given the redevelopment project site constraints. If redevelopment does not result in an increase in impervious area or changes to hydrology that increases the discharge rate from the site, the ten and hundred year criteria do not apply (NYSDEC Stormwater Management Manual Section 9.3.2). If redevelopment results in an increase in the total impervious area and subsequently increased the discharge rate, quantity controls apply. The 1 year 24 hour detention to meet channel protection is not required if the post-construction 1 year 24 hour discharge rate and velocity is less than or equal to the existing discharge rate.



August 2010

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B. PROJECT INFORMATION

Canisius High School is undertaking this capital improvement project to add two baseball diamonds to the existing development on the property which currently includes an existing artificial turf football field, track, field event facilities, locker room and concessions buildings, and parking lot. The planned varsity baseball field will be entirely artificial turf while the junior varsity field will have an artificial turf infield with a natural grass outfield. The varsity field will have two CMU dugout structures with storage integral to the home dugout structure. The varsity field will also have an elevated press box structure, two sets of bleachers with seating for a total of two hundred spectators, a scoreboard, and one batting tunnel. The junior varsity field will have two chain link dugouts and a scoreboard. Discus and Shotput facilities will be relocated. New asphalt walking paths will be added to connect the new site amenities with existing features. The site will be recontoured to meet the requirements of the new fields as well as a natural grass practice field and another flat area suitable to receive tennis courts as part of a potential future project.

The site is located within the Town of West Seneca, Erie County, New York, 2885 Clinton Street (*refer to Supporting Information: Location Map*). The total property size is approximately 26.5 acres. The disturbed portion is approximately 16.6 acres in redevelopment. The site is adjacent to industrial and residential use to the North, a utility infrastructure corridor to the East, a vacant parcel to the South, and The Buffalo Creek along the west. Canisius High School currently owns the entire site. All slopes are presently stable in the areas to be utilized by the owner, There is no evidence of significant erosion under present conditions. All vegetation not within the limits of grading will be protected throughout the construction process.

The project is not located within a TMDL watershed. No run-off will be directly discharged into a 303(d) listed segment; however, Buffalo Creek ultimately discharges to Buffalo River which is a 303*d) listed segment. The Town of West Seneca is the regulated MS4.

A portion of the proposed grading of the site lies within the FEMA 100-year floodplain. The fill necessary to create the required geometry for the baseball fields will be more than offset by the overall recontouring within the floodplain. Analysis of the volume of flood water the site is able to receive (based on FEMA base flood elevation lines) results in a net increase of approximately 40% more volume than is currently accommodated within the site under current conditions. (*refer to Supporting Information: Flood Plain Map - Existing*).

There is a NYSDEC and Federally Regulated wetland on the adjacent property near the westernmost corner of the property. A portion of the redevelopment, including minor grading as well as an approximately 1300 SF portion of asphalt walk is located within the 100 FT buffer of the wetland. The proposed design results in a significant reduction in the footprint of the watershed that is sheeting across the property line toward this wetland area. (*refer to Supporting Information: Wetland Mapping*).

Erosion and sediment control practices will be utilized to prevent damage to adjacent properties, water bodies, circulation routes, and vegetation. Duration of construction activity is anticipated to be in Summer/Fall of 2021 and be 100% stabilized by December of 2021.

C. CONTRACTOR RESPONSIBILITIES

The Contractor shall manage the discharge of stormwater from the site in accordance with the SWPPP report and the construction documents (*See SWPPP drawing and notes*).

D. CONSTRUCTION COMPLIANCE

See Section 3: Erosion Control Measures and Specifications.

E. FINAL STABILIZATION

The site can be considered stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of 80% in areas not covered by permanent structures has been established and the facility no longer discharges stormwater associated with construction activities.

F. OPERATORS NAME AND ADDRESS

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SECTION 2 – STORMWATER ANALYSIS

A. CONCEPT PROPOSAL

All stormwater entering within the contract limit line will be collected into subsurface drainage practices where it will be temporarily stored and treated prior to release off site. Treatment and pre-treatment will be handled through a series of NYSDEC approved practices.

The project site currently collects all stormwater into a series of storm structures that are collected into one basin located on site that directly outlets to Buffalo Creek. The existing basin is located within the 100 year flood plain and currently has no backflow prevention on the outlet pipe from the basin.

The design intent for the proposed project is to impact the existing hydrology of the site by using a pond store water and release at a controlled rate. The site has been adjusted to put the pond out of the 100 year flood plain and a backflow prevention valve installed on the existing pipe outlet that will be utilized for the pond outlet.

The project utilizes a combination of the following to enhance the quality of the project's stormwater runoff:

1. Preservation of some existing vegetated areas.
2. Wet Pond

In addition, this project consists of the redevelopment of a previously developed site, which is encouraged by the NYS DEC because:

1. Redevelopment provides an opportunity to conserve natural resources in less impacted areas by targeting development to areas with existing services and infrastructure.
2. Redevelopment provides an opportunity to correct existing problems and reduce pollutant discharges from older developed sites that were constructed without effective stormwater pollution controls.

B. STORMWATER MANAGEMENT METHODOLOGY

Stormwater Quality: Water quality issues can be divided into two categories, construction phase and operational phase. The major pollutants during the two phases and the strategies to minimize the impacts of these pollutants are different. The New York State Standards and Specifications for Erosion and Sediment Control, dated July 2016, were used to determine the best preventative measures during construction. With these guidelines and an understanding of the watershed characteristics, the short term water quality impacts can be minimized. The impacts during the operational phase were analyzed using the criteria established in the New York State Stormwater Management Design Manual, dated January 2015, to reduce the long

term water quality issues. The water quality volume is required to be collected, stored and released in accordance with the design manual.

Stormwater Quantity: In order to estimate the runoff volume and the peak runoff rates from the watershed under both existing and proposed conditions, a mathematical model of the watershed was prepared. This model utilizes standard engineering practices based on the United States Department of Agriculture's Soil Conservation Service (SCS) Technical Release 55 (TR-55) Urban Hydrology for Small Watersheds.

C. ASSUMPTIONS

Note the following assumptions regarding this stormwater management and pollution prevention plan:

- 1.) Manning's Equation was used with a 10-year storm frequency to size the full flow rate carrying capacities of the proposed storm sewer system. The on-site drainage network has been designed to utilize high density smooth interior corrugated polyethylene pipe (HDPE) with a Manning's roughness coefficient of 0.012, a minimum pipe diameter of 4", a minimum slope of 0.5% and a 300' maximum distance between structures.
- 2.) The existing onsite storm system and watershed was studied for capacity of stormwater based on 1, 10 and 100 year storm events using a stormwater modeling program Hydroflow Hydrographs Extension for AutoCAD Civil 3D 2021.
- 3.) The SCS soils survey shows soils within the project area to be Hamilton Silt Loam (Hm), Teel Silt Loam (Te), Tioga Silt Loam (To), and Wayland Soils Complex (Wd). (*refer to Supporting Information: Soil Information*). For the use in TR-55 calculations, a 'B' soils run-off coefficient is being used (*refer to Supporting Information: Hydrologic Soil Information*).
- 4.) Existing discharge points from the project site watersheds are working satisfactorily and will not be modified with the exception of the backflow prevention valve on the pond outlet.
- 5.) Size of discharge pipes from the project site will not be modified.
- 6.) The proposed site does lie in a FEMA 100-year floodplain and is within a NYSDEC wetland check zone (*refer to Supporting Information: Flood Plain Map*).
- 7.) Refer to CRIS Mapping in SEQR Long Form. (*refer to Supporting Information: State Historic Mapping*).

D. HYDROLOGIC ANALYSIS METHODOLOGY

Stormwater runoff rates discharged from the site under existing conditions provide the basis for evaluation of the impacts of the proposed site improvements. Design points of interest were established where runoff from structures and surfaces designated for stormwater management exits off site. These design points provide fixed locations at which existing and proposed stormwater quantities can be compared. The areas draining to these analysis points were delineated using land survey information, USGS Quadrangle Maps, and proposed grading plans. After the watershed boundaries are delineated, the land uses and hydrologic soil groups for the area are determined.

The land uses within the watershed under existing conditions were determined from field observations and available aerial photography. For the developed conditions, the land uses were taken from the proposed plans of the project. The hydrologic soil groups for the watershed were identified using the Soil Survey compiled by the USDA SCS. Soils are classified into hydrologic soil groups to indicate the minimum rate water enters bare soil after prolonged wetting. The hydrologic soil groups are a factor in determining the runoff curve number for a watershed.

The runoff curve number (CN) is based on a weighted average of ground cover and soil type. Time of concentration (Tc) represents the time it takes for the surface runoff to travel from the hydraulically most distant point within the watershed to the point of analysis. It defines the time that the entire watershed is contributing runoff to the design point. Several flow paths were delineated and travel times for each path were calculated. The path with the longest travel time was determined to be the path for the time of concentration. Surface slope, roughness, channel slope and shape, flow patterns and runoff velocities are factors that all directly affect the time of concentration.

Runoff velocities are based on ground characteristics and flow type. Stormwater runoff flows through drainage areas as sheet flow, shallow concentrated flow, open channel flow or flow in storm sewers. Runoff begins as sheet flow in the upper limits of the watershed and can be characterized as flow over a broad surface area such as short stretches of grass and/or pavement. Sheet flow then gradually develops into shallow concentrated flow. The maximum distance for sheet flow is 150 feet in existing conditions and 100 feet in proposed conditions. Once those limits are met the flow is then considered shallow concentrated. Open channel flow or concentrated flow occurs when shallow concentrated flow converges into well defined ditches or storm sewers. Stormwater flow patterns were observed during field investigation if possible. These flow patterns assisted in the classification of the flow path for the time of concentration. The observed flows give a general idea of where sheet flow ends and shallow concentrated flow begins, and where existing channels are located. The time of concentration flow path for the proposed condition was calculated using USGS mapping, survey, as well as the proposed plans for the project.

The hydrologic models use synthetic storm events when calculating runoff hydrographs. These synthetic storm events are based on statistical analysis of actual storm events for different durations over a broad geographical area. The SCS categorizes rainfall by distribution type associated to geographical area, and by the total number of inches of precipitation that is assumed to occur over a 24-hour duration.

The proposed project lies within the geographical boundary of the Type II rainfall distribution area. Rainfall values for the 1, 2, 10 and 100-year storm events were gathered from the Cornell Northeast Regional Climate Center (<http://precip.eas.cornell.edu>) for a more accurate representation of rainfall within the project area used for the stormwater calculations (*refer to Supporting Information G: Rainfall Frequencies*).

Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2021 software was used to perform SCS (now called Natural Resources Conservation Service, NCRS) NRCS TR-20 hydrological analysis of each of the watersheds and model their discharges. For the pre-developed and developed conditions hydrologic models were completed for the 1, 2, 10, and 100 year storm events.

E. WATERSHED ANALYSIS

The existing and proposed conditions for the watersheds in this analysis were delineated from available United States Geological Survey (USGS) Quadrangle Maps, topographic survey maps of the project site and field condition reviews. The site is studied through an existing and proposed watersheds (*refer to Section 5: Existing and Proposed Watersheds*) to evaluate the project impact on stormwater.

The total watershed for the project area includes approximately 26.55+/- acres, divided into sub watersheds. Existing there are 5 watersheds on the site. Watershed A along the north end of the property and at Clinton Street, sheet flows into a vegetated swale before discharging off the property. Watershed B includes majority of the developed areas, track, parking lot and athletic fields and drains into an existing basin that outlets to Buffalo Creek. Currently there are no backup prevention measures on that pipe and the basin is located within the 100 year flood plain. Watershed C is along the West end of the property sheet flows off the property. Watershed D is located along Buffalo Creek and currently sheet flows to the creek. Watershed D is also within the 100 year flood plain.

The proposed site is broken down into 4 watersheds. Watershed A remains the same as existing. Watershed B has increased to encompass the redeveloped athletic facilities. The entirety of Watershed B is captured into a series of stormwater structures and piped to a new wet pond that is now located out of the 100 year flood plain line. The wet pond utilizes the existing basin's outlet pipe however a backflow prevention valve is proposed on the existing pipe to ensure flood waters do not enter the pond. The pond also is designed to hold the 100 year storm without utilizing the existing outlet pipe to Buffalo Creek. Watersheds C and D are reduced in the proposed and retain their existing sheet flow outlets at the property lines.

F. PEAK FLOW SUMMARY TABLES

Peak Flow Summary Table – Existing Conditions (Figure 1)

Existing	Peak Flows (CFS)					
Watersheds	<u>1 Year (CFS)</u>	<u>10 Year (CFS)</u>	<u>25 Year (CFS)</u>	<u>100 Year (CFS)</u>	<u>Outlet Condition</u>	<u>Known Flooding/Issues</u>
<u>A</u>	0.042	0.750	1.275	2.462	Vegetated Swale	none
<u>B</u>	5.146	16.79	23.95	38.90	15" CIP at Buffalo Creek	Within 100yr flood
<u>C</u>	0.011	1.232	2.768	6.473	Sheet Flow	Within 100yr flood
<u>D</u>	0.050	2.889	6.268	15.10	Sheet Flow at Buffalo Creek	Within 100yr flood
<u>E</u>	0.004	0.257	0.559	1.328	Sheet Flow	Within 100 yr flood
<u>Total</u>	5.253	21.918	34.82	64.263		

Peak Flow Summary Table – Proposed Conditions (Figure 2)

Proposed Watersheds	Peak Flows (CFS)				<u>Outlet Condition</u>	<u>Know Flooding/Issues</u>
	<u>1 Year (CFS)</u>	<u>10 Year (CFS)</u>	<u>25 Year (CFS)</u>	<u>100 Year (CFS)</u>		
<u>A</u>	0.042	0.750	1.275	2.462	Vegetated Swale	none
<u>B</u>	0.851	4.610	6.213	1.141	15" CIP with Backflow Valve	Within 100yr flood
<u>C</u>	0.006	0.651	1.374	3.096	Sheet Flow	Within 100yr flood
<u>D</u>	0.027	2.044	4.435	10.34	Sheet Flow at Buffalo Creek	Within 100yr flood
<u>Total</u>	0.075	4.546	13.297	17.039		

Conclusion: Stormwater existing the property in the proposed condition is less than existing. Watershed B uses a backflow valve to block off the 1, 10 and 25 year outlet of the proposed wet pond. The 25 year storm total in the proposed is less then the 10 year storm total in the existing. These numbers represent the pond storage above the permanent pool elevation.

G. STORAGE / TREATMENT TABLE AND SUMMARY

Watershed	<u>CPv</u>			<u>WQv</u>			<u>RRv</u>		
	<u>Required</u> AC-FT	<u>Provided</u> AC-FT	<u>Type</u>	<u>Required</u> AC-FT	<u>Provided</u> AC-FT	<u>Type</u>	<u>Required</u> AC-FT (CFS)	<u>Provided</u> AC-FT (CFS)	<u>Type</u>
<u>B</u>	0.4605	0.4786	Pond	0.049	0.508	Pond	0.013	0.041	Infiltration Trench

Conclusion: The designed pond has a water quality volume of 19,975 CF which is large enough to treat the existing parking lot and track that are not being disturbed in this project, as well as the proposed impervious areas. Infiltration trenches are used for the proposed impervious areas as pretreatment but also for RRv. There is a forebay for pretreatment that is sized at 4,473 cf of storage.

Wet Pond:

Bottom of Pond	elev. 588.50
WQv	elev. 590.50
Permanent Pool	elev. 592.93
1 year Storm CPv	elev. 593.60
Q10	elev. 594.16
Q100	elev. 597.25

H. REFERENCES

1. USDA, Soil Conservation Service, Urban Hydrology for Small Watersheds. Technical Release 55, Second Edition. U.S. Government Printing Office, Washington, D.C., June 1986, Updated January 1998.
2. NYS, Department of Environmental Conservation, Stormwater Management Design Manual. January 2015.
3. US EPA, Chesapeake Research Consortium, Inc., Design of Stormwater Filtering Systems. December 1996.
4. NYS, Department of Environmental Conservation, New York Standard and Specifications for Erosion and Sediment Control. July 2016.
5. Autodesk, AutoCAD Civil 3D Hydraflow Hydrographs Extension User's Guide, April 2016.

SECTION 3 – EROSION CONTROL, INSPECTIONS, and MAINTENANCE

A. EROSION CONTROL MEASURES AND SPECIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide erosion, sediment and pollution controls as shown on the drawings and as directed by the Architect to significantly reduce runoff on downstream and neighboring properties. This includes temporary control measures to mitigate land disruption by other Contractors during construction of this project.
- B. Erosion, sediment and pollution control includes, but is not limited to, the following:
 - 1. Storm structure protection
 - 2. Silt fence
 - 3. Rip rap
 - 4. Off site sediment tracking controls
 - 7. Temporary concrete washout facility
 - 8. Temporary seeding
 - 9. Permanent seeding and sodding
 - 10. Straw mat
 - 11. Temporary basin outlet sedimentation trap
 - 12. Temporary sediment filter bag for pumped water
 - 15. Construction site dust control
 - 16. Spill prevention, reporting and documentation
 - 17. Clean up
- C. Provide materials, labor, equipment and services required to accomplish related work in accordance with the drawings and specifications.
- D. Code Compliance: The New York State Department of Environmental Conservation requires a SPDES General Permit for Storm Water Discharges from Construction Activity. This Permit GP-0-15-002 is pursuant to the Environmental Conservation Law and has penalties and fines related to violations.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 311201 - Site Preparation
- B. Section 312201 - Site Earthwork

- C. Section 329201 - Lawns
- D. Section 334001 - Storm Drainage

1.3 REFERENCES

- A. Spill Guidelines Manual (SGM) New York State Dept. of Environmental Conservation.
- B. New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005 or latest edition.

1.4 SUBMITTALS: (See Section 311201, 1.5)

- A. Manufacturer's Data (MPD) are required for:
 - 1. Filter Fabric for Storm Structure Protection
 - 2. Silt Fence with Net Backing
 - 3. Soil Separation Fabric for Off Site Sediment Tracking Control
 - 4. Sediment Filter Bag
 - 5. Straw Mat
 - 6. Spill Response Equipment
- B. Material Certificates (MC) showing content/mechanical analysis and Samples are required for:
 - 1. Rip Rap
 - 2. No. 3 Stone for Off Site Sediment Tracking Control
 - 3. Temporary Seeding: Submit seed mix species and source
 - 4. Permanent Seeding & Sodding: (See Section 329201)
- C. Certification Statement: Submit photocopy of Section 312501, 1.7, filled out completely and accurately to the Landscape Architect at the pre-construction meeting.
- D. Listing of emergency contract numbers. This list shall include the name of an Emergency Response Contractor that may be used in certain situations.
- E. Per NYSDEC SPDES Regulations, all onsite contractors performing earth disturbing activities need to have current NYSDEC endorsed 4-hour erosion and sediment (E&SC) training. Provide copies of all onsite personnel certification

cards, prior to construction. The document shall be kept on file (by the Contractor) within the onsite SWPPP log book.

1.5 QUALITY ASSURANCE

- A. Perform erosion, sediment and pollution control in compliance with applicable requirements of the New York Standards and Specifications Erosion and Sediment Control Manual, dated July 2016 (or latest edition) or other governing authorities having jurisdiction.
- B. It is this Contractor's responsibility to prevent stormwater pollution from running offsite. All pollution control work related to the site contract shall be included in the Base Bid. All pollution control work related to other contracts shall be on a time and material basis and back-charged to the responsible party.
- C. In the event of a chemical or hazardous spill or release, the individual(s) who caused the spill is responsible for prompt and proper clean-up. If the spill requires cleanup procedures beyond the means of the Contractor, an emergency spill cleanup Subcontractor shall be hired by the Contractor. They shall be utilized when the Contractor does not have the appropriate training, equipment or materials to cleanup the area safely and effectively. This shall be done at no additional cost to the Owner. Any testing and cleanup required post cleanup shall be provided by the Contractor at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Job conditions in Sections 311201, 312201, 329201 and 334001 apply.
- B. Contractor will take all necessary precautions to avoid allowing dust generation that violates NYSDEC regulations and compromises compliance with governing authorities air monitoring plan.

1.7 CERTIFICATIONS

- A. Authorized, legally responsible signatures for the General Contractor, Site Earthwork, Landscaping Subcontractor(s) and any other soil disturbing Contractor shall sign and prominently display the following certification statement at the job trailer or office during the life of the project:

"I hereby certify that I understand and agree to comply with the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) and agree to implement any corrective actions identified by the qualified inspector during the site inspection. I also understand that the owner/operator must comply with the

terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject one to criminal, civil and/or administrative proceedings."

1. General Contractor

Signature: _____

Name: _____

Title: _____

Address: _____

Phone No.: _____

Email: _____

2. Site Earthwork Contractor

Signature: _____

Name: _____

Title: _____

Address: _____

Phone No.: _____

Email: _____

3. Site Landscaping Contractor

Signature: _____

Name: _____

Title: _____

Address: _____

Phone No.: _____

Email: _____

4. Other Sub Contractors

Signature: _____

Name: _____

Title: _____

Address: _____

Phone No.: _____

Email: _____

1.8 NOTICES

- A. The Operator (Owner) shall file with the New York State Department of Environmental Conservation (NYSDEC) a Notice of Intent (NOI) a minimum of ten (10) days prior to start of construction. Unless notified by the NYSDEC to the contrary within ten (10) days, a general SPDES permit is automatically issued which authorizes discharge of storm water on the construction site.
- B. When the site has been finally stabilized, the Operator (Owner) shall file with the NYSDEC a Notice of Termination (NOT).

- C. The Operator (Owner) is responsible for payment of annual fees related to the SPDES permit. Filing of a NOT shall typically terminate the Operator's fee responsibility.

1.9 INSPECTIONS AND MAINTENANCE

- A. The Architect or qualified personnel of the Operator shall inspect disturbed areas of the construction site at least once per week. Special attention will be focused on areas not finally stabilized, structural control measures, point discharge (outlets) and locations where vehicles enter or exit the site. Disturbed areas will be inspected for pollutants entering the drainage system. Structural control measures will be reviewed for effectiveness in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site will be inspected for evidence of off site sediment tracking. A written report of inspections shall be produced in a journal during the construction operations. The journal shall be made available (by the Operator/Owner) for NYSDEC and the general public to review.
- B. The Contractor shall provide timely maintenance of vegetation erosion and sediment control measures, and other protective measures, during construction. Corrective measures must be performed within one (1) calendar day of the Architect's or Operator's (Owner's) report. Failure by the Contractor to perform corrective work within this schedule automatically authorizes the Operator to hire others and backcharge this Contractor. The Architect or Operator will send a letter or email correspondence one (1) calendar day before hiring others and backcharging this Contractor. The Contractor shall keep a written record of maintenance and corrective work in a journal. The journal shall be made available for the Operator, Architect, Landscape Architect, Soil and Water Conservation District, ACOE, and NYSDEC until the site is finally stabilized.
- C. The Contractor shall conduct daily inspections of the equipment staging and maintenance, fueling, hazardous waste staging and waste storage areas to ensure that spill control measures are in place. Stock appropriate clean-up materials whenever changes occur in the types of chemicals used or stored on site.
- D. The Contractor is responsible for having mandatory, up to date NYSDEC endorsed 4-hour erosion and sediment control (E&SC) training all personnel working on site in accordance with the SPDES permit.
- E. The Operator (Owner) shall provide long term maintenance of the storm water facilities after the site is finally stabilized. The designated maintenance personnel shall keep written records and pictures of maintenance and corrective

work in a journal. All stormwater discharge points shall be maintained, inspected, and documented. The journal shall be made available for review by the NYSDEC for a minimum period of five (5) years after the Notice of Termination (NOT) has been filed.

1.10 SPILL PREVENTION, REPORTING AND DOCUMENTATION

- A. To minimize the potential for discharge to the environment of oils, petroleum, or other hazardous substances, the following requirements shall apply:
 1. All oil, petroleum, or hazardous materials stored or temporarily relocated on site during the construction process shall be stored in a way to provide protection from vehicular damage and to provide containment of leaks or spills. Temporary berms, dikes, storage basins, or similar methods shall be employed as appropriate on site.
 2. Refer to Storm Water Pollution Prevention Plan Notes for additional spill prevention good housekeeping practices.
 3. Maintain file of Material Safety Data Sheets (MSDSs) or other references for recommended spill clean-up methods and materials.
 4. Keep spill response equipment readily accessible.
- B. In the event of a spill contact the Construction Manager, Owner (Operator), and Architect. The Contractor shall also notify all other Contractors working around the area of the spill.
- C. If spilled material has entered any sanitary/storm sewer system then contact the municipality or agency with jurisdiction over the system, in addition to those listed in this section.
- D. The contractor shall be responsible for the initiation of spill reporting and documentation procedures. All petroleum spills must be reported to NYSDEC Spill Hotline at 1-800-457-7362, less than two (2) hours following discovery. All petroleum spills must be reported to NYSDEC unless all of the following apply:

Criteria	Description
Quantity	Must be known to be less than 5 gallons.
Containment	Must be contained on an impervious surface or within an impervious structure. No access to the environment.
Control	Must be under control and not reach a drain or leave the impervious surface.

- Cleanup Must be cleaned-up within two (2) hours of occurrence.
- Environment Must not have already entered into soil or groundwater or onto surface water.

- E. A release of a “reportable quantity”¹ or unknown amount of a hazardous substance must also be immediately reported to the NYSDEC Spill Hotline. Spills of reportable quantities of chemicals or “harmful quantities”² of oil to navigable waters must be reported to the federal National Response Center, 1-800-424-8802 or 1-202-426-2675.

¹ Reportable Quantity: Refers to the quantity of a hazardous substance or oil that triggers reporting requirements under the Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA) (USEPA, September 1992).

² Harmful Quantity: Includes discharges that violate applicable water quality standards, cause a film, sheen, or discoloration on a water surface or adjoining shoreline; or cause a sludge or emulsion to be deposited beneath the water surface or shoreline (40 CFR 110.3).

PART 2 - PRODUCTS

2.1 STORM STRUCTURE PROTECTION

- A. Shall be commercially manufactured, needle-punched, non- woven geotextile, comprised of polypropylene fibers. Standard of quality shall be Mirafi 140N as manufactured by Tencate/Mirafi Group, www.tencate.com, or Architect approved equal.

- B. Stakes: Shall be square, non pressure treated hardwood. Size as detailed.

- C. 1A stone meeting the following requirements:

<u>Standard Sieve Size</u>	<u>Percent Passing by Weight</u>
1/2"	100
1/4"	90-100
1/8"	0-15
No. 200 Sieve	0-10

2.2 SILT FENCE

- A. Shall be a woven polypropylene geotextile comprised of UV stabilized polypropylene slit film and 1.25" square, non pressure treated, pointed, hardwood posts and net mesh backing for additional support. Standard of quality for silt fence shall be IVI-3611MW as manufactured by Indian Valley Industries, Inc., www.iviindustries.com, (607) 729-5111, or Architect approved equal.

2.3 RIP RAP

- A. Light: Shall be placed rip rap. Stones conforming to NYSDOT Table 733-21A and the following gradations:

<u>Standard Sieve Size</u>	<u>Percent Passing by Weight</u>
Lighter than 100 lbs	90 - 100
Larger than 6"	50 - 100
Smaller than ½"	0 - 10

- OR -

Medium: Shall be placed rip rap. Stones conforming to NYSDOT Table 733-21A, Stone Filling Item "Medium". 50% to 100% shall be heavier than 100 lbs. and 0% to 10% may be smaller than 4".

- OR -

Heavy: Shall be placed rip rap. Stone conforming to NYSDOT Table 733-21A, Stone Filling Item "Heavy". 50% to 100% shall be heavier than 600 lbs. and 0% to 10% may be smaller than 6".

- B. Gradation of rip rap shall be accepted or rejected based on a visual examination by the Architect prior to placing rip rap.
- C. Soil Separation Fabric: Shall commercially manufactured non-woven polypropylene filter fabric. Standard of quality shall be Mirafi 140N as manufactured by NICOLON/MIRAFI GROUP or Architect approved equal.

2.4 OFF SITE SEDIMENT TRACKING CONTROLS

- A. No. 3 stone shall meet the following requirements:

<u>Standard ASTM Sieve Size</u>	<u>Percent Passing by Weight</u>
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3"	100
2"	0-15
Passing No. 50	5-10
Passing No. 100	2-5

- B. Soil Stabilization Fabric: Shall be a commercially manufactured, UV stabilized low clogging, high flow, woven geotextile. Standard of quality shall be Mirafi 600X, as manufactured by NICOLON/MIRAFI GROUP, 3500 Parkway Lane, Norcross, Georgia (Tel. 1-800-234-0484) or Architect approved equal.
- C. Granular Base Course Material (for Type 2 only): Shall be as specified in Section 312201.

2.5 TEMPORARY SEDIMENT FILTER BAG FOR PUMPED WATER

- A. Provide prefabricated bags/pouches with nonwoven geotextile fabric. The standard of quality shall be Dirtbag as manufactured by ACF Environmental, 800-448-3636 or Architect approved equal.
- B. Provide wooden pallet to set filter bag on for ease of disposal.

2.6 TEMPORARY CONCRETE WASHOUT FACILITY

- A. Concrete washout facility to fully contain all concrete washout needs of the entire project and all contracts.
- B. Concrete washout facility shall be temporary straw bales that are lined with a single sheet of a minimum of 10 mil polyethylene sheeting that extends over the entire basin to prevent escape of discharge. Place a secure, non-collapsing, non-water collecting cover over the concrete washout facility prior to inclement weather to prevent accumulation and overflow of precipitation.
- C. Provide concrete washout to prevent discharge from concrete trucks or equipment cleaning to inlets, surface or groundwater.
- D. Concrete washout facility shall be no closer than 50 feet from environmentally sensitive areas such as waterbodies, wetlands, and open drainage facilities and watercourses. Signs shall designate concrete washout facilities.
- E. Ensure that the concrete washout facility complies with all Federal, State and local laws, rules, and regulations. Ensure that the concrete washout facility is in place before delivery of concrete to site.

- F. Provide a sign identifying area as "Concrete Washout" acceptable to the Architect. Maintain throughout the project duration.

2.7 TEMPORARY SEEDING

- A. Seeding shall be 100% Perennial Ryegrass with no more than 30% of any one cultivar and always at least 2 different cultivars and a 90% germination rate or more.
- B. All seed mixtures to contain 0.5% weed seed or less.
- C. All seed must be fresh seed, not seed that is left over from last year and beyond the sell by date.

2.8 PERMANENT SEEDING AND SODDING

Seeding and Sodding shall be as specified in Section 329201.

2.9 STRAW MAT

- A. 100% biodegradable thread on 1.5 inch centers stitched to a 100% biodegradable natural fiber top net. Blanket shall be manufactured with a colored line or thread stitched 2-5 inches from edge to ensure proper overlap. Standard width is 4'-0".
- B. Standard of quality shall be BioNet Blanket as manufactured by North American Green, 1-800-772-2040 or Architect approved equal for the following slope conditions:

<u>Slope Condition</u>	<u>Water Flow Condition</u>	<u>Product Type</u>
4:1 (or flatter)	Low flow (5 fps)	S75BN: Single Net Straw
3:1	Moderate flow (6 fps)	S150BN: Double Net Straw
2:1	Medium flow (8 fps)	SC150BN: Double Net Straw-
Coconut		(70/30
blend)		
1:1 (and greater)	High Flow (10 fps)	C125BN: Double Net Coconut

- C. Stakes: Six inch lengths of 100% biodegradable "T" shaped pin designed to safely secure erosion control blanket. Standard of quality shall be Bio-Stake as manufactured by North American Green or Architect approved equal.

2.10 TEMPORARY BASIN OUTLET SEDIMENTATION TRAP

- A. Basin Outlet Sedimentation Trap shall be constructed of perforated (HDPE) pipe and clean No. 1 stone.
- B. Filter Fabric: Shall be commercially manufactured, needle-punched, non-woven geotextile, comprised of polypropylene fibers. Standard of quality shall be Mirafi 140N as manufactured by Tencate/Mirafi Group, www.tencate.com, or Architect approved equal.
- C. Concrete shall be 4,000 psi as specified in Section 321301.

2.11 SPILL RESPONSE EQUIPMENT

- A. The following is a list of recommended spill control material. The contractor is responsible to have spill control and personnel protective equipment readily available for the materials being used. Acquire sufficient quantities and types of appropriate spill control materials needed to contain any spills that can be reasonably anticipated. The need for equipment to disperse, collect and contain spill control materials should be on site at all times.
 - 1. Personal Protective Equipment
 - a. Chemical Splash Goggles
 - b. Gloves
 - c. Boot Covers
 - d. Tyvek Aprons or Suits
 - 2. Absorption Materials
 - a. Spill Pillows and Socks
 - b. Absorbent Booms and Pads
 - c. Dikes for use on rough surfaces
 - d. Storm Structure Covers
 - e. "Loose" Absorbents
 - 3. Tools
 - a. Shovel, Broom, Brush
 - b. Disposal Bags
 - c. Sealing Tape
 - d. Hazardous Waste Stickers
 - e. "Danger" and "Keep Away" Signs
 - f. Five gallon pails or 20 gallon drums with polyethylene liners

- B. Basis of Design shall be provided by: 3M, 888-364-3577; New Pig Corporation, 800-468-4647; SpillKits911, 800-474-5911; Dawg, Inc., 800-935-3294; or Architect approved equal.
- C. Place spill response equipment in a readily assessable location within or immediately adjacent to the project site.

PART 3 - EXECUTION

3.1 SIGNATURE REQUIREMENTS

- A. Between the Pre-Construction Meeting and starting site work, the Contractor shall:
 - 1. Sign the certification statements. Contractor shall prominently display the statements at the job site.
 - 2. Review inspection and maintenance procedures. Decide where journals will be temporarily stored for review by NYSDEC, S&WC, ACOE, Operator (Owner), the Landscape Architect and Architect.
 - 3. Designate specific Owner and Contractor personnel responsible for daily inspection and maintenance. Provide certification cards.

3.2 GENERAL EROSION CONTROL

- A. Install initial construction erosion control features, as indicated on drawings and specifications or as directed by the Architect, prior to topsoil stripping, earthwork, and removal of existing vegetation. Keep the disturbance to a minimum and shall not exceed five (5) acres, unless directed by the Architect. Install other features as described in the sequence of erosion, sediment and pollution control on the drawings.
- B. Start permanent seeding within seven (7) calendar days of rough grading. When this is not possible, provide temporary seeding of 100% perennial rye grass at the rate of six pounds (6#) seed per one thousand (1,000 sf) square feet. Provide temporary seeding within seven (7) days on non-roof, non-paved areas. When adverse weather conditions prevent good germination, repeat seeding as directed by the Architect until the area is stabilized. Till under temporary grass and fine grade when preparing for final permanent lawn stabilization.
- C. Until a disturbed area is stabilized, trap runoff sediment by the use of sediment debris basins, diversion swales, sediment raps, or other methods acceptable to

the Architect and governing authorities. Provide temporary dry mulch (straw) to stabilize exposed soils as directed by the Architect.

- D. Provide erosion controls on slopes and swales traversing, bordering, or leaving the site. Limit the water flow to a nonerosive velocity.
- E. Do not store fill materials within one hundred (100') feet of the banks of any streams or waterbodies, intermittent or perennial.
- F. Inspect erosion and sediment control measures immediately after each rainfall and at least daily during prolonged rainfall. Make required repairs immediately.
- G. Remove sediment deposits when they reach approximately one-half of the height of the barrier. Dispose sediment in a manner that does not result in additional erosion or pollution.
- H. Provide prompt (weekly) removal and disposal of rubbish and debris in accordance with the governing authorities, Owner policies, and good housekeeping measures.

3.3 MUNICIPAL SEWER, SWALES AND WETLAND EROSION CONTROL

Control erosion, siltation and pollution to municipal sewers, swales and wetlands by taking appropriate measures such as, but not limited to, the following:

- A. Do not disturb the bed and banks of waterbodies unless specifically shown on drawings. When bed and bank work is shown, obtain permits and proceed with work creating the minimum disturbance necessary to complete the project.
- B. Prevent petroleum products and excessive amounts of silt, clay, and muck from entering municipal sewers, waters, swales or wetlands of New York State during construction.
- C. Prevent fresh concrete, concrete leachate, and washings from equipment and trucks, from entering municipal sewers, waters, swales or wetlands of New York State during construction.
- D. Place silt fence to control erosion at the downslope edge of disturbed areas. This barrier to sediments is to be put in place before disturbance of the ground occurs and is to be maintained in good condition until disturbed land is heavily vegetated or otherwise permanently stabilized.

- E. Seed areas of soil disturbance resulting from this project with appropriate perennial grass seed and mulched with straw within seven (7) calendar days as described in general erosion control. Mulch shall be maintained until a suitable vegetative ground cover is established and as directed by the Architect.

3.4 CONSTRUCTION SITE DUST CONTROL

- A. The Contractor shall prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety issues.
- B. Dust control applies to construction roads, access points, other disturbed areas and stockpiles subject to surface dust movement and dust blowing.
- C. Contractor may use any number and combination of dust control methods, as approved by the Architect. They include:
 - 1. Applying water to haul roads
 - 2. Restricting vehicle speeds to 10 mph
 - 3. Hauling materials in properly tarped or watertight containers.
 - 4. Covering stockpiles and materials
 - 5. Wetting equipment and work area
 - 6. Mulching
 - 7. Spray adhesives and polymer additives (MSDS sheets required)
 - 8. Barriers and wind breaks
- D. Contractor is responsible for any cleanup and site restoration associated with dust control measures, dust pollution on or off the project site property at no additional cost to the Owner.

3.5 STORM STRUCTURE PROTECTION (IN LAWN AREAS)

- A. Cut fabric from a continuous roll to eliminate joints. If joints area needed they will be overlapped to the next stake.
- B. Space stakes evenly around inlet 3 feet apart and drive a minimum 18 inches deep. Spans greater than 3 feet may be bridged with the use of wire mesh behind the filter fabric for support.
- C. Fabric shall be embedded 1 foot minimum below round and backfilled. It shall be securely fastened to the stakes and frame.

- D. A 2" x 4" wood frame shall be completed around the crest of the fabric for over flow stability.
- E. Wrapping the storm structure grate with fabric is NOT acceptable, however straw bales may be used in lieu of filter fabric.

3.6 STORM STRUCTURE PROTECTION (IN DISTURBED PAVED AREAS)

- A. Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block opening perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to stone in place.
- B. The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth over all block openings to hold stone in place.
- C. As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet.
- D. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be guised as necessary to prevent bypass flow.

3.7 SILT FENCE

- A. Locate as shown on drawings and as directed by the Architect. Excavate trench along the lower perimeter(s) of site, along the contract limit line, and as indicated on the drawings. Place excavated material on uphill side of trench for backfilling.
- B. Drive stakes securely into the downhill side of the trench. When prefabricated silt fence with fabric attached to stakes is used, drive stakes so that fabric is buried in the ground as detailed.
- C. Backfill trench with excavated material, so that fabric is securely buried in the ground to prevent undermining. Tamp soil.

- D. Join sections by overlapping fabric between two (2) stakes. Set stakes simultaneously. Overlap by minimum six (6") inches, fold, and staple to prevent sediment bypass.
- E. Attach silt fence securely to stakes spaced no more than eight (8' o.c.) feet on center. Secure fence fabric to stake with minimum three one (1") inch staples.
- F. Toward the end of the project, when site is stabilized and as directed by the Architect, remove silt fence and correct lawn area around removal to a smooth, neat, well-draining condition.

3.8 RIP RAP

- A. Place and install rip rap where shown on drawings. Do not leave jagged, sharp pieces of stone facing up.
- B. Level out stone to provide smooth transition to adjacent finish grades.

3.9 OFFSITE SEDIMENT TRACKING CONTROLS

- A. Install as detailed and shown on drawings to eliminate tracking sediment off site. Inspect after each rain storm and at the end of each work day.
- B. When sediment begins tracking off site, sweep and clean affected roadway immediately and replace stone with clean No. 3 stone to retain sediment on site.
- C. Remove fabric and stone at project completion. Complete construction of proposed final surface(s).

3.10 TEMPORARY SEDIMENT FILTER BAG FOR PUMPED WATER

- A. Install prefabricated bags/pouches on top of straw bale base as recommended by the manufacturer. Replace system when full (discharge into bag/pouch is significantly reduced).
- B. Silt may be used as general site fill or hauled off site. Remove straw bales, fabric, and prefabricated bags/pouches off site. Regrade area and return to lawn as specified.

3.11 TEMPORARY CONCRETE WASHOUT FACILITY

- A. Install per detail in a location as approved by the Owner. Provide a stable surface, easily accessible by concrete trucks.
- B. A sign shall be installed adjacent to each washout facility to inform concrete equipment operations to utilize the proper facilities. The sign shall be installed as detailed and maintained throughout the project.
- C. Temporary concrete washout facility shall be constructed and maintained in sufficient quantity and size to contain all liquids and concrete waste generated by washout operations for the entire project and by all Contracts.
- D. Perform washout of concrete mixers, delivery trucks, and other delivery systems in designated areas only.
- E. Wash concrete only from mixer chutes into approved concrete washout facility.
- F. Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.
- G. Contents of the concrete washout facility shall not exceed 50% capacity of the facility. At or before 50% capacity is reached, discontinue pouring concrete until the facility is cleaned out. Remove hardened concrete and properly dispose off site. Allow slurry to evaporate or remove from site and dispose off site. Immediately replace the liner if it gets damaged.
- H. Remove concrete washout facility when it is no longer needed as directed by the Architect.

3.12 TEMPORARY SEEDING

- A. Provide temporary seeding of topsoil stockpile immediately.
- B. When necessary and as directed by the Architect, provide temporary seeding on disturbed areas at no additional cost to the Owner.

3.13 PERMANENT SEEDING AND SODDING

- A. Install as described in Section 329201.

3.14 STRAW MAT

- A. Install as recommended by the manufacturer and as directed by the Architect for drainage channels and slopes.
- B. Stake spacing shall reflect slope to which the straw is being applied.

3.15 SPILL RESPONSE EQUIPMENT

Use per manufacturer's recommendations and as directed by the NYSDEC, or other governing agencies.

3.16 CLEAN UP

- A. During the contract and at intervals as directed by the Architect and as erosion, sediment and pollution control procedures are completed, clear the site of extraneous materials, rubbish, and debris. Leave the site in a clean, safe, well draining, and neat condition.
- B. Clean storm ponding areas, catch basins and detention basins: Clean out contaminants, sediment, rubbish, construction debris, foreign objects and accumulated floatables from chambers and ponding areas thoroughly, immediately prior to final acceptance.

B. CONSTRUCTION SEQUENCING

The following sequence of construction must be reviewed and updated on a weekly basis by the Contractor/Owner.

1. Obtain all applicable permits.
2. Hold pre-construction meeting.
3. Designate trained contractors, qualified individuals, and qualified professionals.
4. Contractors and subcontractors sign the SWPPP Contractor's Certification.
5. Install work zone traffic control devices according to the plan approved by governing authority.
6. Delineate disturbed and sensitive areas onsite.
7. Stockpile erosion control materials.
8. Install construction fence around the limits of intense construction activity.
9. Install vegetation protection.
10. Install stabilized construction entrances.
11. Install stabilized equipment storage areas.
12. For motor fuel, lubricant, hydraulic fluids and other chemicals held onsite in containers holding more than 5 gallons, install storage with secondary containment on a stable, level, and impervious surface.
13. Install silt fence perimeter controls.
14. Install sediment traps/basins and stabilize with seed/mulch.
15. Perform clearing and grubbing operations.
16. Remove obstructions and establish demolitions.
17. Strip and stockpile topsoil. Stabilize with temporary seed and silt fence.
18. Perform rough grading and earthwork. Stabilize within fourteen (14) days from last disturbance.
19. Install concrete washout facility (CWF).
20. Install all utilities (sanitary, water, gas, etc.) including all storm sewers/manholes.
21. Install inlet protection as necessary to protect all drainage structures and install outlet protections.
22. Construct buildings, roads, parking areas, and sidewalk stone base.
23. If necessary establish additional measures as required by SWPPP inspections.
24. Leave slope surfaces slightly roughened to a depth of 2 inches maximum. After grading slope surfaces, drive the tracked equipment up and down the slope to discourage formation of rills. Apply temporary seed and mulch immediately.
25. Restore soils per NYSDEC guidelines.
26. Install final grading, paving, concrete walks, etc..
27. Reinstall topsoil and landscaping.
28. Where soil disturbance activity has permanently ceased; fine grade, permanently seed and mulch or sod as described in the lawn specification.
29. Install above and underground detention facilities.

30. Remove all temporary erosion control practices when the site is stabilized to the satisfaction of the Owner's Representative.

C. CONSTRUCTION MAINTENANCE

All erosion and sediment control practices will be checked for stability and operation daily by the contractor and weekly by the design professional. Any needed repairs will be made immediately to maintain all design practices as installed for their appropriate phase of the project. Sediment will be removed from temporary practices when storage capacity is approximately 50% full. Stone will be replaced or cleaned once it is apparent that the quality of control has decreased. All seeded areas will be reseeded as necessary and mulched according to the specifications to maintain a vigorous, dense vegetative cover. Construction waste disposal and spill prevention shall be as outlined on the (Storm Water Pollution Prevention Plan) of the contract documents.

D. LONG TERM MAINTENANCE

RESPONSIBLE PARTY

Canisius High School owns the stormwater management practices and is responsible for inspection and maintenance of the systems.

STORMWATER PRACTICES

The following are the installed practices that will require inspection and maintenance:

1. Catch Basin(s) / Storm Inlets
2. Conveyance Stormwater Pipe
3. Stormwater Discharge Points
4. Wet Pond
5. Infiltration Trench
6. Vegetation Management

STORMWATER PRACTICE MAINTENANCE

1.) Catch Basin/Storm Inlet:

A storm inlet is a concrete structure fitted with a slotted grate to collect stormwater runoff and route it through underground pipes. Storm inlets typically provide a storage volume (sump) below the outlet pipe to allow sediments and debris to settle out of the stormwater runoff. The most common tool for cleaning field inlets is a truck with a tank and vacuum hose (vactor truck) to remove sediment and debris from the sump.

Facility objects that are typically associated with a field inlet include:

- Access road or easement
- Control structure/flow restrictor
- Bioswale
- Detention pond
- Infiltration basin control
- Infiltration trench

Storm Inlet Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Frequency	Action Required
General	Trash and Debris	<ol style="list-style-type: none"> 1. Trash or debris is located immediately in front of the basin opening or is blocking inletting by more than 10%. 2. Trash or debris in the basin that exceeds 60% of the sump depth as measured from the bottom of basin to invert of the 	3 months	Clear trash and debris from site and from structures. Maintain inlet and outlet pipes free of trash and debris.

	lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the debris surface to the invert of the lowest pipe.			
	3. Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.			
	4. Dead animals or vegetation			
Sediment	Trash or debris that exceeds 60% of the sump depth as measured from the bottom of basin to invert of the lowest,, but in no case less than a min. of 6" clearance from the debris surface to the invert of the lowest pipe.	6 months		Remove sediment.
Structure Damage to Frame and/or Top Slab	Frame not sitting flush on top slab (separation of more than ¼ inch of the frame from the top slab. Frame not secured.	6 months		Reset frame to structure so sitting flush on riser rings or top slab. Reattach securely.
Fractures or Cracks in Structure	1. Maintenance person judges that structure is unsound. 2. Evidence of soil entering catch basin through cracks.	6 months		Replace or repair basin to design standards. Re-grout pipe and secure at basin walls.
Settlement/ Misalignment	If failure of basin has created a safety, function or design problem.	6 months		Replace or repair basin to design standards.
Vegetation	1. Vegetation growing across and blocking more than 10% of the basin opening.	6 months		Remove vegetation.

2. Vegetation growing in pipe joints that is more than 6 inches				
	Contaminants and Pollutions	Any evidence of oil, gasoline, contaminants or other pollutants. Coordinate removal/cleanup according to Material Safety Data Sheets and/or with NYSDEC Spill Prevention Team	3 months	Remove un-contained pollutants or contaminants.
Metal Grates	Grate Openings	Openings wider than 7/8 inch.	6 months	Replace grate.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	6 months	Clean trash and debris from grate.
	Damaged or Missing	Grate missing or portions broken.	6 months	Replace grate.

2.) Conveyance Stormwater Pipe

Inlet and outlet stormwater pipes convey stormwater in, through, and out of stormwater facilities. Stormwater pipes are cleaned to remove sediment or blockages when problems are identified. Stormwater pipes must be clear of obstructions and breaks to prevent localized flooding. All stormwater pipes should be in proper working order and free of the possible defects listed below. Blockages can result in a decrease of hydraulic capacity and also create standing water (nuisances). Many times blockage to conveyance pipes can be difficult to access and/or clean. Specialized equipment (jet/vac machines) may be necessary to clear debris from these difficult areas.

Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Frequency	Action Required
General	Obstructions, including roots.	Root enters or deforms pipe, reducing flow.	Yearly	Remove roots. Do not use root-dissolving chemicals in storm sewer pipes. If necessary, remove the

				vegetation over the line.
Pipe Dented or Broken	Pipe damaged or broken and in need of repair.	Yearly	Repair and/or replace pipe.	
Pipe Rusted or Deteriorated	Pipe is crushed or deformed more than 20% or any other failure to the pipe.	Yearly	Repair and/or replace pipe.	
Sediment and Debris	Sediment depth greater than 20% of pipe diameter.	Yearly	Remove sediment and debris. Flush pipe.	
Debris Barrier or Trash Rack Missing	Pipes greater than 18 inches need debris barrier.	Yearly	Install if needed.	

3.) Stormwater Facility Discharge Points

Stormwater facility discharge points may convey stormwater from the stormwater facility into drainage trenches and receiving waters or other drainage areas. Stormwater facility discharge points need to be assessed to make sure stormwater is not causing any negative impacts to these drainage areas.

Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Frequency	Action Required
Monitoring	Inspections of Discharge Water for Obvious Signs of Poor Water Quality	Sheen, obvious oil or other contaminations present.	3 months	Identify and remove source. Effluent discharge should be clear.
	Off Site Assessment	Erosion, scouring or head cuts in ditch or stream banks due to flow channelization, or high flows.	3 months	Stabilize using NYSDEC E&SC approved Management Practice.
General	Missing or Moved Rock	Only one layer of rock exists above native soil in area 5 square feet or larger, or any exposure of	6 months	

	native soil.			
Erosion	Soil erosion in or adjacent to rock pad.	3 months		
Obstructions, including roots.	Root enters or deforms pipe, reducing flow.	Yearly		Remove roots. Do not use root-dissolving chemicals in storm sewer pipes. If necessary, remove the vegetation over the line.
Pipe Rusted or Deteriorated	Pipe is crushed or deformed more than 20% or any other failure to the pipe.	Yearly		Repair and/or replace pipe.

4.) Wet Pond

A wetpond is an open basin that retains a permanent pool of water (wetpool) year round or only during the wet season. The volume of the wetpond allows sediment and other pollutants to settle out of the runoff. Wetland vegetation is typically planted within the wetpond to provide additional treatment through nutrient (i.e. nitrogen) removal. Detention quantity control can be provided with additional temporary storage volume above the permanent pool elevation.

Facility objects that are typically associated with a wetpond include:

- Access road or easement
- Fence, gate, and water quality sign
- Detention pond
- Control structure/flow restrictor
- Energy dissipaters
- Debris barrier (e.g. trash rack)

Wetponds Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Frequency	Action Required
General	Water Level	First bay is empty, doesn't hold water.	6 months	Line first bay to maintain at least 4 feet of water. This is used to control

				turbulence of the incoming flow and reduce sediment re-suspension.
Trash and Debris	Accumulation that exceeds 1 cubic feet per 1000 square feet of pond area.	3 months		Remove trash and debris.
Sediment Accumulation in Pond Bottom	Accumulation in pond bottom that exceeds depth of sediment zone plus 6-inches, usually in the first bay.	6 months		Remove sediment from pond bottom.
Oil Sheen on Water	Prevalent and visible.	3 months		Remove oil using oil-absorbent pads or vactor truck. Locate source and correct. If chronic low levels of oil persist, plant wetland plants which can uptake small concentrations of oil (i.e. Soft Rush)
Erosion	Erosion of side slopes and/or scouring of the pond bottom, that exceeds 6-inches, or where continued erosion is prevalent.	3 months		Stabilize slopes using approved NYSDEC E&SC practices.
Settlement of Pond Dike/Berm	Any settlement of 4-inches or lower than the design elevation.	6 months		Repair to design standard.
Internal Berm	Berm dividing bays should be level.	6 months		Level berm surface to that water flows evenly over entire length of berm.
Overflow Spillway	Rock is missing and soil is exposed at top of spillway or outside slope.	6 months		Replace rock to specifications.

5.) Infiltration Trench

A stormwater infiltration trench is a closed basin built by excavating below existing ground. Infiltration trenches temporarily store stormwater runoff during rain events. Infiltration trenches do not discharge to a downstream conveyance system or nearby surface water. Instead, infiltration trenches rely on the ability of the site's soils to infiltrate the stormwater into the ground.

Facility objects that are typically associated with an infiltration trench include:

- Access road or easement
- Fence, gate, and water quality sign
- Bioswale
- Storm inlet

Infiltration Trench Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Frequency	Action Required
General	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.	3 months	Coordinate removal/cleanup with NYSDEC.
	Observation Well	Sediment depth greater than one foot above stone aggregate or the surface inlet.	6 months	Remove sediment.
	Drainage Slow	Decreased capacity that indicates slow drainage.	6 months	Clean perforated drainage pipe. Do not allow removed sediment and water to discharge back into storm sewer.

6.) Vegetation Management

All landscape management decisions for controlling unwanted vegetation, diseases, and pests should follow Integrated Pest Management principles and decision-making rationale. These are:

- Proper planning and management decisions begin the IPM process
- Cultural methods of vegetation and pest control are preferred and are first employed
- Mechanical means of vegetation and pest control are next in line of preference, and are utilized where feasible

- Biological methods of vegetation and pest control are considered before chemical means, where they are feasible
- Botanical and synthetic pesticides are used only when no other feasible methods exist

Vegetation and Pest Management in Stormwater Control Facilities:

Stormwater control facilities include biofiltration treatment swales, treatment wetlands, treatment ponds, detention ponds, open channels, and infiltration basins. Stormwater control facilities discharge to surface water or groundwater either directly or through pipes or ditches. Many facilities are built to remove pollutants from stormwater. Generally, vegetation should be maintained to blend into surrounding areas. Stormwater facilities can provide habitat for aquatic life and birds. Promoting natural vegetation where feasible improves habitat. Swales often blend into intensively managed landscapes. Pond perimeters can include natural vegetation. The use of pesticides and, in most cases fertilizer, is not compatible with the task of pollutant removal or the direct connection of stormwater facilities to streams and groundwater.

Vegetation Health:

Over time, the plant species diversity, percentage mix, and numbers will vary to that specified on the original landscape plan. This is to be expected and the plants should be left, to a certain extent, to find their own natural balance

The maintenance required the establishment period includes:

- Staking, with an appropriate length stake, any plants suffering stress from excessive wind movement. Stakes should be removed from a tree once determined that they will be able to withstand the effects of the wind.
- Watering and nitrogen application as required, particularly during summer months or any other extended dry periods.
- Periodic inputs will comprise replacement of any unhealthy plants and watering during extremely dry periods.

Weeds and Plant Control:

In situations where vegetation has been established, undesirable plants can be expected. These undesirable plants can adversely impact the aesthetic value of a treatment system. This can also apply to wet detention littoral zones, which may be invaded by undesirable aquatic plant species. The regularity and scheduling of weed removal and planting maintenance can be determined following inspections. Any weed control undertaken should keep in mind that total eradication may be counterproductive, as these plants may be providing the necessary cover for the desired plants to become established.

- All weed control should be completed mechanically, by hand (cutting, pulling or digging out), or by spot spraying with suitable herbicides when required.
- When using herbicides within any area, care should always be taken to reduce spray drift, contamination or waterways, and effects on non-target plants.

- The use of herbicides within or near any water body may require resource consent. The owner should ensure all necessary consents are obtained and any leftover chemicals disposed of properly.
- All specimen trees should be monitored and protected from suffocation from weed and grass species.

Features of Stormwater Facilities:

- There is a mix of native and non-native plants
- Generally not used by the public
- Include areas managed to promote design function, such as turf in swales
- Managed landscapes may be nearby
- May be used by fish and wildlife

Objectives for Stormwater Facilities:

- Maintain healthy plant communities
- Avoid or minimize need for chemical intervention
- Control invasive plants where feasible
- No bare soil areas are allowed
- Tolerance for natural appearance and weeds

Grass Maintenance:

Trimming of grass around fences, amenity and outlet/inlet structures and pathways should be undertaken regularly to provide an attractive and well kept appearance. Grass, or vegetation cuttings or debris shall not be dumped along stream edges. Cuttings can increase nutrient loadings, resulting in potential algal blooms. Infiltration practices should be mowed grass to a height of four inches and clippings need to be removed.

Additional inputs include periodic fertilizing and soil condition in order to maintain healthy growth. Provisions may have to be made to re-seed and /or re-establish grass cover in areas damaged by sediment accumulation, stormwater flow, or other causes.

Practices:

The vegetation management focus is establishing and maintaining healthy low-maintenance native plantings and sustaining the design function of vegetated filters. This includes controlling invasive plants where feasible, and planting cover on bare soils. Consider the use of soil amendments such as compost before using fertilizer. Limit mulch use to covering bare soil while establishing plantings. Chemical use should be avoided within 25 feet of any area that holds or conveys surface water or stormwater. This includes the base of a biofiltration swale.

SEDIMENT REMOVAL

-All removed sediment and debris will be disposed of in a location as determined by the Canisius High School. Removal will be in conformance with all municipal, state, and federal requirements for proper disposal.

SECTION 4 – SUPPORTING INFORMATION

Location Map

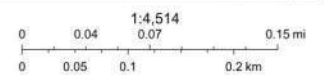
ArcGIS Web Map



3/31/2020, 9:10:34 AM

SAM Address Points

- Rooftop
- Parcel Centroid
- Driveway Entrance
- Miscellaneous
- Primary Structure Entrance
- Spatially Invalid
- Unassigned
- Parcels
- Municipal Boundaries



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, NYS

Web AppBuilder for ArcGIS

Province of Ontario, Ontario MNR, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA | USGS TNM - National Hydrography Dataset. Data Refreshed January, 2020. | NYS GIS Program Office | Telephone: (516) 242-5029 | Email: its.am.SAM.Maintenance@its.ny.gov

Regulated MS4

Canisius High School

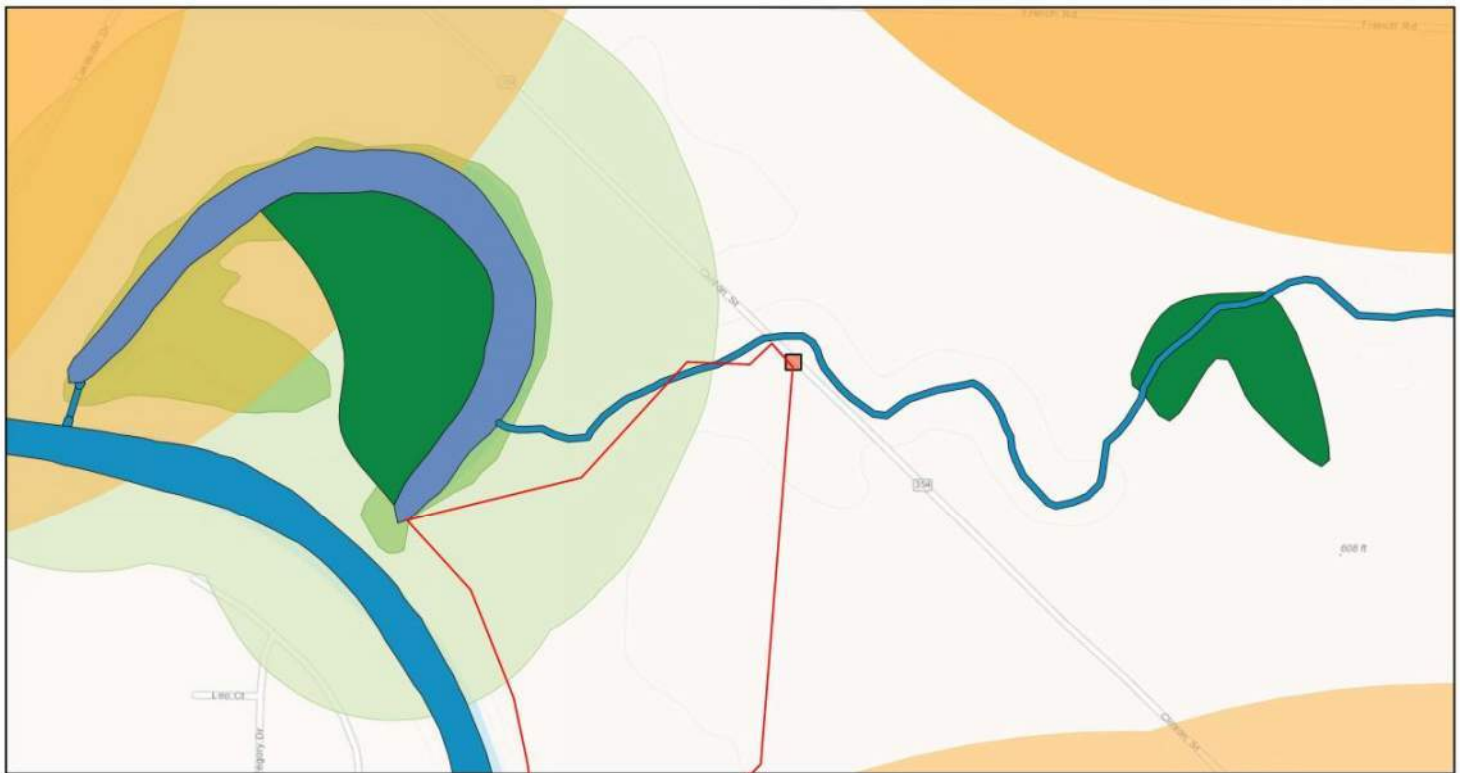


April 26, 2021

1:9,028
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0 0.07 0.15 0.3 km
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,
USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE,
NYS Department of Environmental Conservation
Not a legal document

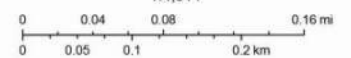
Wetland Mapping - NYSDEC

Canisius High School Athletic Complex



April 28, 2020
Legend:

- ☒ ★ Unique Geological Features
- ☒ Waterbody Classifications for Rivers/Streams
- ☒ Waterbody Classifications for Lakes
- ☒ State Regulated Freshwater Wetlands (Outside of the Adirondack Park)
- ☒ State Regulated Wetland Checkzone
- ☒ Significant Natural Communities
- ☒ Natural Communities Near This Location
- ☒ Rare Plants or Animals
- ☒ National Wetlands Inventory
 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake
 - Other
 - Riverine



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document

Wetland Mapping - Federal



Canisius High School Athletic Complex



April 28, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

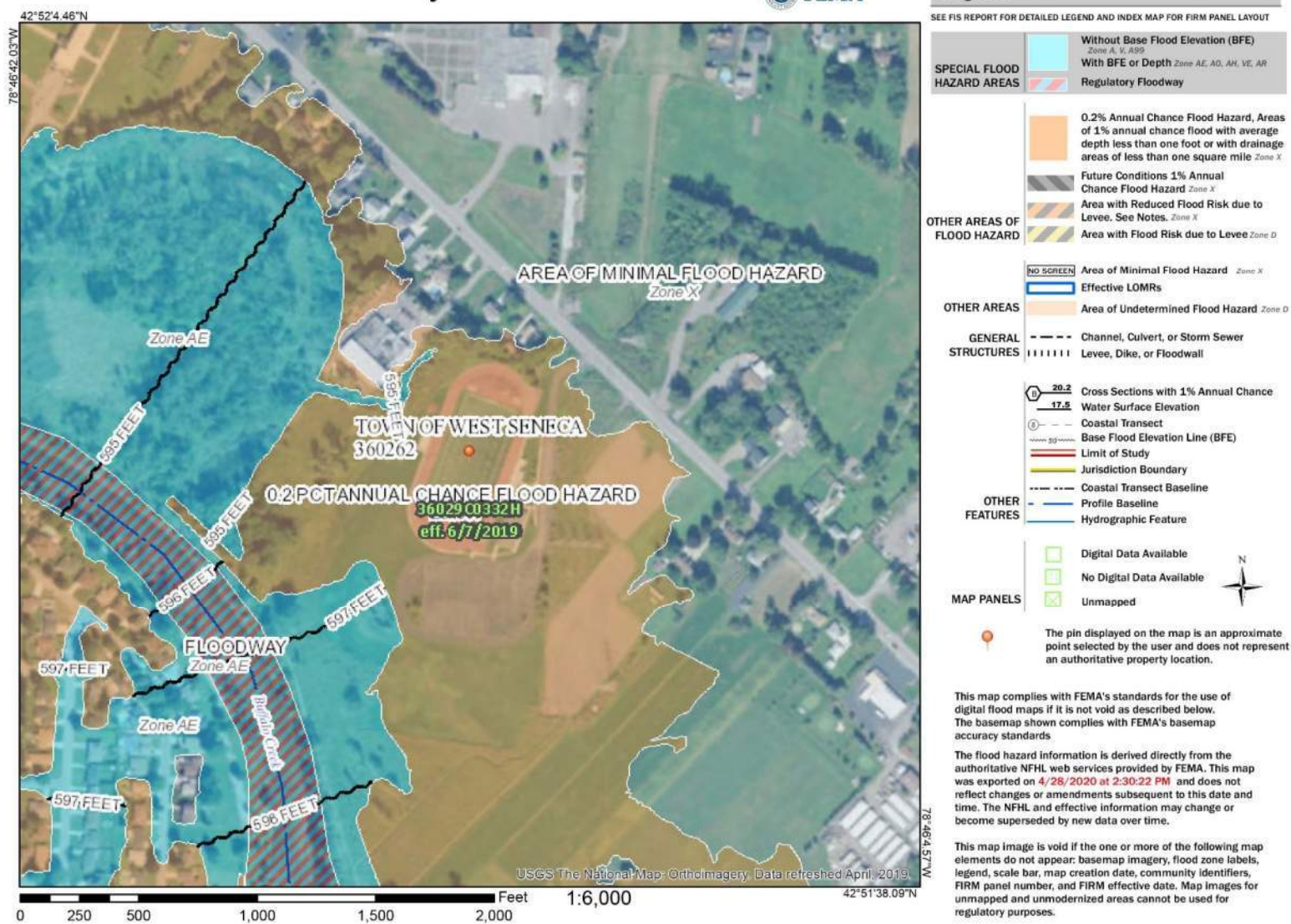
- Lake
- Other
- Riverine



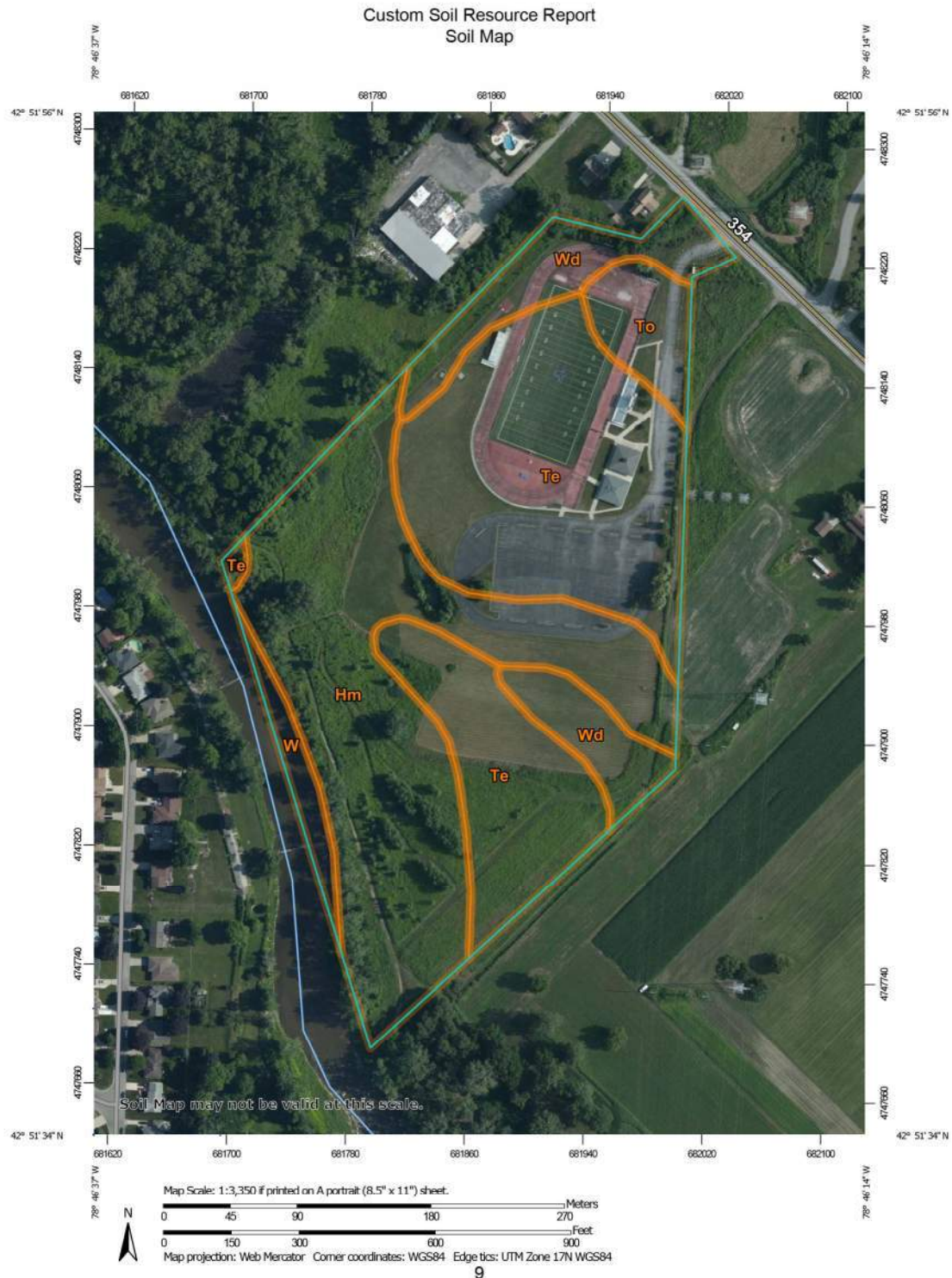
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

National Flood Hazard Layer FIRMette

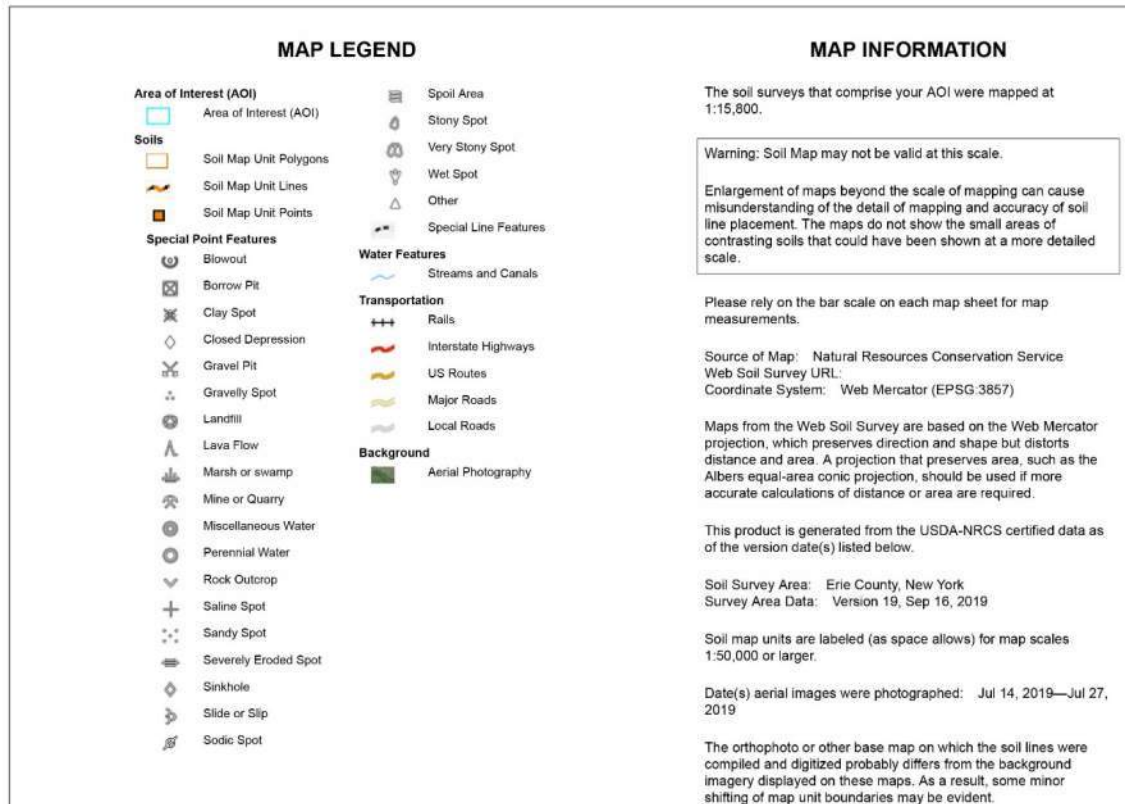


Soil Map

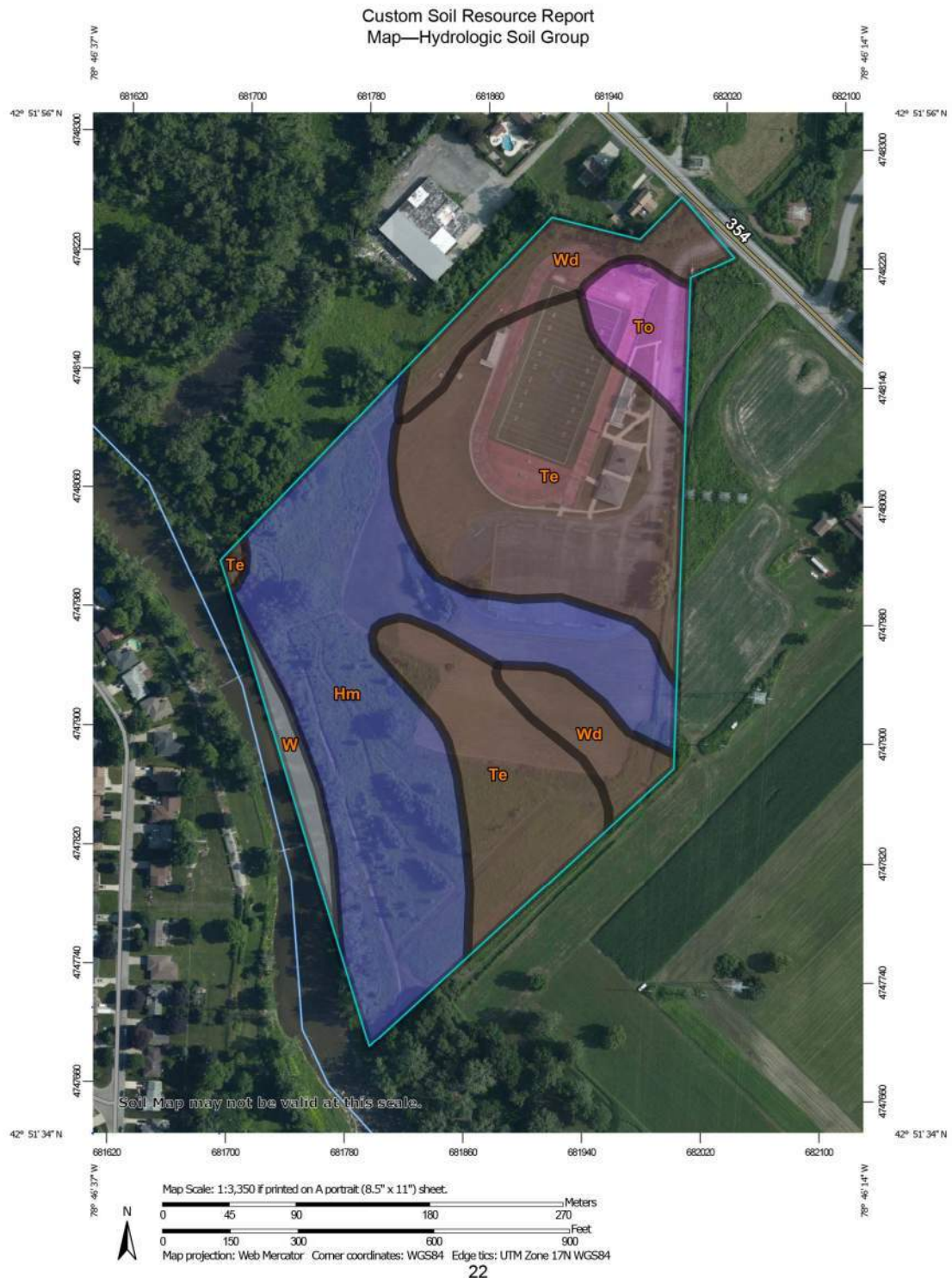


Soil Legend

Custom Soil Resource Report

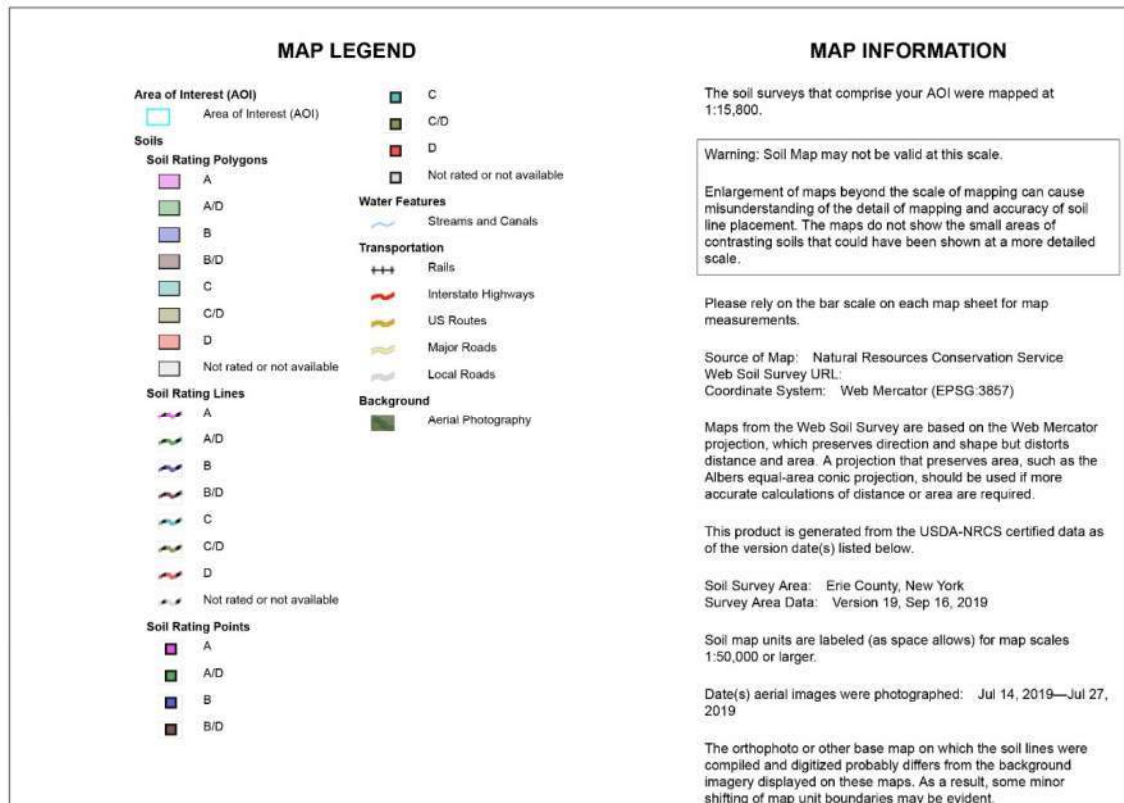


Hydrologic Soil Group

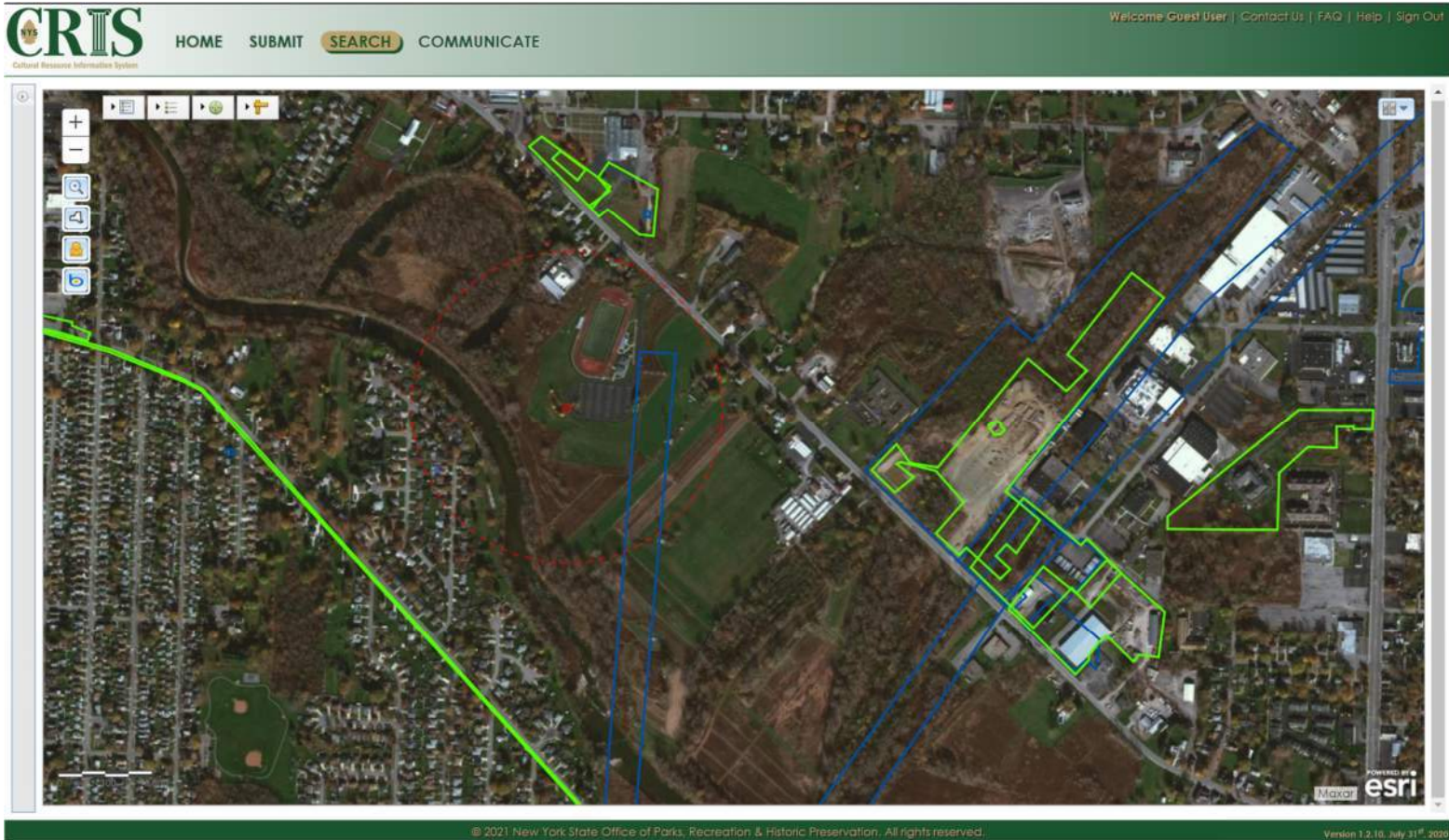


Soil Legend

Custom Soil Resource Report



State Historic Preservation Office Map



Rainfall Frequencies

3/10/2021

Extreme Precipitation Tables: 42.863°N, 78.774°W

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	78.774 degrees West
Latitude	42.863 degrees North
Elevation	0 feet
Date/Time	Wed, 10 Mar 2021 13:51:40 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.41	0.51	0.67	0.83	1.02	1yr	0.72	0.94	1.14	1.35	1.58	1.83	2.16	1yr	1.62	2.08	2.52	3.01	3.51	1yr
2yr	0.31	0.48	0.60	0.79	0.99	1.21	2yr	0.86	1.12	1.37	1.62	1.90	2.20	2.52	2yr	1.95	2.42	2.87	3.41	3.91	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.52	5yr	1.06	1.40	1.72	2.03	2.35	2.69	3.08	5yr	2.38	2.96	3.47	4.09	4.69	5yr
10yr	0.41	0.65	0.82	1.12	1.46	1.81	10yr	1.26	1.66	2.04	2.40	2.77	3.14	3.58	10yr	2.78	3.45	4.01	4.69	5.38	10yr
25yr	0.49	0.78	1.00	1.37	1.82	2.26	25yr	1.57	2.08	2.56	2.99	3.42	3.84	4.38	25yr	3.40	4.22	4.87	5.63	6.47	25yr
50yr	0.56	0.90	1.15	1.61	2.16	2.69	50yr	1.87	2.47	3.04	3.53	4.01	4.47	5.11	50yr	3.96	4.91	5.63	6.47	7.43	50yr
100yr	0.63	1.03	1.33	1.88	2.56	3.20	100yr	2.21	2.95	3.61	4.19	4.72	5.22	5.95	100yr	4.62	5.72	6.52	7.44	8.54	100yr
200yr	0.73	1.19	1.54	2.21	3.04	3.81	200yr	2.63	3.51	4.29	4.95	5.55	6.09	6.94	200yr	5.39	6.67	7.56	8.55	9.82	200yr
500yr	0.88	1.44	1.88	2.73	3.82	4.79	500yr	3.30	4.42	5.38	6.17	6.87	7.48	8.50	500yr	6.62	8.17	9.18	10.27	11.81	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.43	0.58	0.72	0.86	1yr	0.62	0.84	0.86	1.13	1.45	1.64	1.99	1yr	1.45	1.91	2.25	2.70	3.25	1yr
2yr	0.30	0.46	0.57	0.77	0.95	1.10	2yr	0.82	1.07	1.20	1.46	1.75	2.14	2.46	2yr	1.89	2.37	2.79	3.32	3.81	2yr
5yr	0.34	0.52	0.65	0.89	1.13	1.30	5yr	0.98	1.27	1.44	1.74	2.07	2.50	2.90	5yr	2.21	2.79	3.27	3.86	4.41	5yr
10yr	0.37	0.57	0.71	0.99	1.28	1.46	10yr	1.10	1.43	1.64	1.96	2.34	2.80	3.27	10yr	2.48	3.15	3.69	4.31	4.89	10yr
25yr	0.43	0.65	0.81	1.15	1.51	1.72	25yr	1.31	1.68	1.92	2.30	2.75	3.26	3.85	25yr	2.89	3.70	4.30	5.00	5.57	25yr
50yr	0.47	0.71	0.89	1.28	1.72	1.93	50yr	1.48	1.89	2.18	2.58	3.10	3.66	4.36	50yr	3.24	4.19	4.85	5.61	6.16	50yr
100yr	0.51	0.78	0.97	1.41	1.93	2.17	100yr	1.67	2.12	2.46	2.91	3.50	4.09	4.93	100yr	3.62	4.74	5.47	6.29	6.80	100yr
200yr	0.57	0.86	1.09	1.57	2.19	2.44	200yr	1.89	2.39	2.78	3.26	3.94	4.58	5.59	200yr	4.05	5.38	6.16	7.06	7.49	200yr
500yr	0.65	0.97	1.25	1.81	2.58	2.84	500yr	2.22	2.77	3.26	3.79	4.59	5.32	6.61	500yr	4.70	6.36	7.22	8.23	8.53	500yr

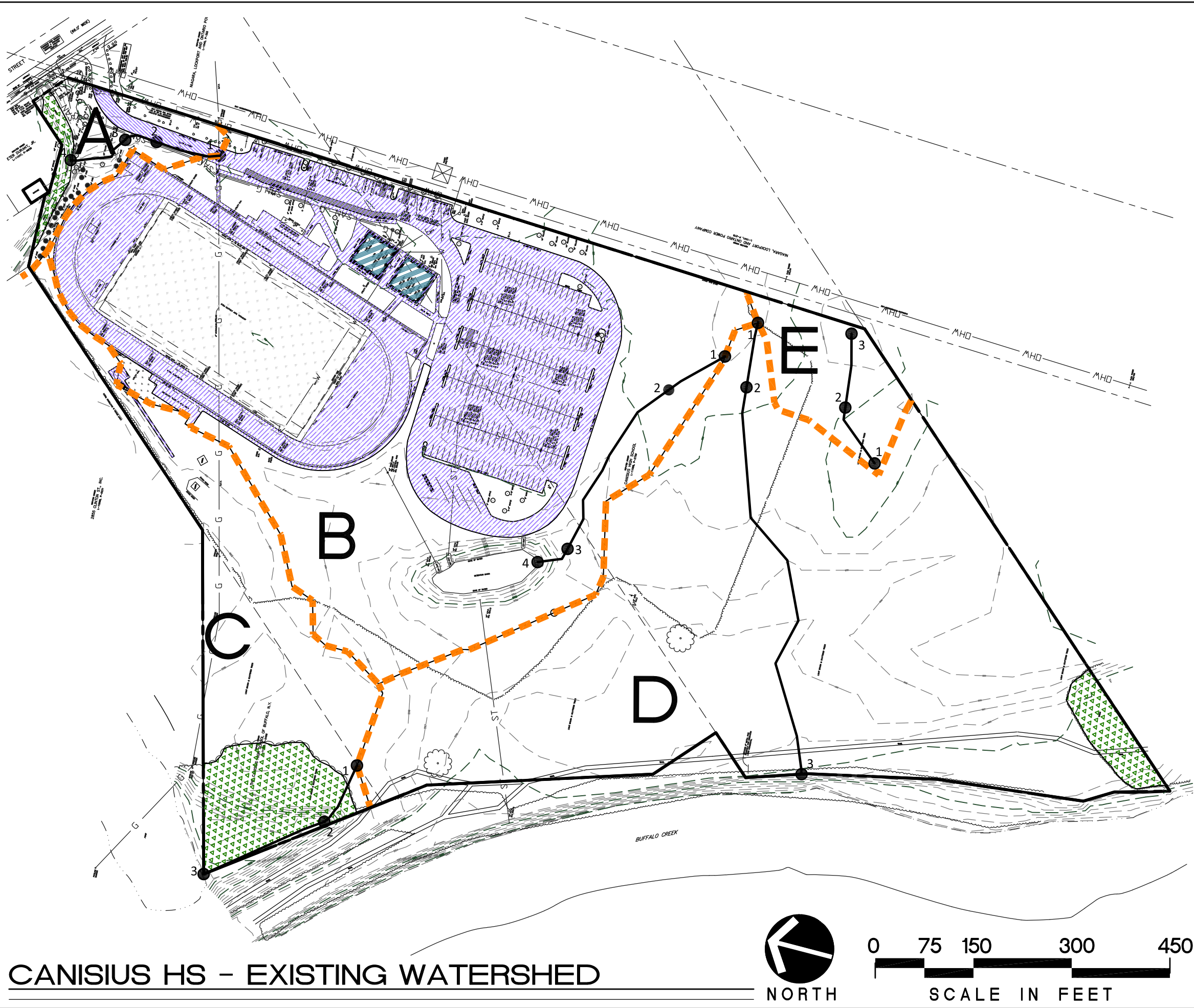
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.08	1yr	0.81	1.06	1.21	1.43	1.73	1.99	2.32	1yr	1.76	2.23	2.68	3.19	3.71	1yr
2yr	0.32	0.50	0.62	0.83	1.03	1.20	2yr	0.89	1.18	1.32	1.60	1.90	2.28	2.61	2yr	2.02	2.51	2.96	3.51	4.07	2yr
5yr	0.40	0.62	0.77	1.05	1.34	1.57	5yr	1.15	1.53	1.73	2.10	2.50	2.90	3.27	5yr	2.57	3.15	3.67	4.33	4.96	5yr
10yr	0.47	0.73	0.90	1.26	1.63	1.92	10yr	1.41	1.88	2.15	2.59	3.09	3.49	3.89	10yr	3.09	3.74	4.34	5.10	5.82	10yr
25yr	0.60	0.92	1.14	1.63	2.15	2.59	25yr	1.85	2.53	2.85	3.44	4.08	4.46	4.90	25yr	3.95	4.71	5.41	6.31	7.21	25yr
50yr	0.71	1.09	1.35	1.95	2.62	3.21	50yr	2.26	3.14	3.55	4.26	5.04	5.38	5.83	50yr	4.76	5.61	6.42	7.41	8.49	50yr
100yr	0.86	1.29	1.62	2.34	3.21	3.98	100yr	2.77	3.89	4.42	5.28	6.23	6.50	6.94	100yr	5.75	6.67	7.60	8.71	9.99	100yr
200yr	1.02	1.54	1.95	2.82	3.94	4.94	200yr	3.40	4.83	5.51	6.56	7.70	7.86	8.25	200yr	6.96	7.93	8.99	10.25	11.77	200yr
500yr	1.30	1.94	2.50	3.63	5.16	6.56	500yr	4.45	6.42	7.38	8.73	10.20	10.13	10.38	500yr	8.96	9.98	11.24	12.69	14.61	500yr

Powered by ACIS

SECTION 5 – PLANS

- Existing Watershed
- Proposed Watershed
- SWPPP - Stormwater Pollution Prevention Plans
- Grading and Utility Plans
- Layout Plans



CANISIUS HS - EXISTING WATERSHED

EXISTING CONDITIONS

LEGEND

- PAVEMENT
- ROOF
- SYNTHETIC TURF
- WOODS
- LAWN
- 1 TIME OF CONCENTRATION
- WATERSHED BOUNDARY

'B' Soils = 100% of Site

A	SURFACE CONDITIONS =	0.77 Ac	CN
	PAVEMENT =	0.12 Ac	98
	WOODS =	0.12 Ac	55
	LAWN =	0.53 Ac	61
		COMPOSITE	66

TIME OF CONCENTRATION = 6 minutes

100' Paved sheet flow at 1.9%
52' Lawn shallow concentrated flow at 0.86%
98' Lawn shallow concentrated flow at 3.06%

B	SURFACE CONDITIONS =	11.78 Ac	CN
	PAVEMENT =	4.88 Ac	98
	ROOF =	0.11 Ac	98
	SYNTHETIC TURF =	1.78 Ac	85
	LAWN =	5.01 Ac	61
		COMPOSITE	80

TIME OF CONCENTRATION = 21 minutes

100' Lawn sheet flow at 0.7%
297' Lawn shallow concentrated flow at 1.16%
55' Lawn shallow concentrated flow at 9.07%

C	SURFACE CONDITIONS =	2.94 Ac	CN
	PAVEMENT =	0.01 Ac	98
	WOODS =	0.73 Ac	55
	LAWN =	2.20 Ac	61
		COMPOSITE	60

TIME OF CONCENTRATION = 8.7 minutes

100' Lawn sheet flow at 6.81%
200' Lawn shallow concentrated flow at 2.0%

D	SURFACE CONDITIONS =	10.22 Ac	CN
	WOODS =	0.25 Ac	55
	LAWN =	9.97 Ac	61
		COMPOSITE	61

TIME OF CONCENTRATION = 22.2 minutes

100' Lawn sheet flow at 0.97%
628' Lawn shallow concentrated flow at 1.01%

E	SURFACE CONDITIONS =	0.82 Ac	CN
	LAWN =	0.82 Ac	61
		COMPOSITE	61

TIME OF CONCENTRATION = 18.8 minutes

100' Lawn sheet flow at 0.72%
113' Lawn shallow concentrated flow at 1.20%



PROPOSED CONDITIONS

LEGEND

- PAVEMENT
- ROOF
- SYNTHETIC TURF
- WOODS
- LAWN
- 1 TIME OF CONCENTRATION
- WATERSHED BOUNDARY

'D' Soils = 100% of Site

A	SURFACE CONDITIONS =	0.77 Ac	CN
	PAVEMENT =	0.12 Ac	98
	WOODS =	0.12 Ac	55
	LAWN =	0.53 Ac	61
		COMPOSITE	66

TIME OF CONCENTRATION = 6 minutes

100' Paved sheet flow at 1.9%
52' Lawn shallow concentrated flow at 0.86%
98' Lawn shallow concentrated flow at 3.06%

B	SURFACE CONDITIONS =	18.65 Ac	CN
	PAVEMENT =	5.90 Ac	98
	ROOF =	0.14 Ac	98
	SYNTHETIC TURF =	5.64 Ac	85
	LAWN =	6.97 Ac	61
		COMPOSITE	80

TIME OF CONCENTRATION = 23.6 minutes

100' Lawn sheet flow at 1.06%
132' Lawn shallow concentrated flow at 1.51%
83' Lawn shallow concentrated flow at 6.02%

C	SURFACE CONDITIONS =	1.33 Ac	CN
	PAVEMENT =	0.01 Ac	98
	WOODS =	0.12 Ac	55
	LAWN =	1.20 Ac	61
		COMPOSITE	61

TIME OF CONCENTRATION = 7.4 minutes

100' Lawn sheet flow at 7.0%
190' Lawn channel flow at 2.1%

D	SURFACE CONDITIONS =	5.80 Ac	CN
	PAVEMENT =	0.10 Ac	98
	WOODS =	0.25 Ac	55
	LAWN =	5.45 Ac	61
		COMPOSITE	61

TIME OF CONCENTRATION = 15.7 minutes

100' Lawn sheet flow at 1.67%
206' Lawn shallow concentrated flow at 1.61%
119' Lawn shallow concentrated flow at 0.84%

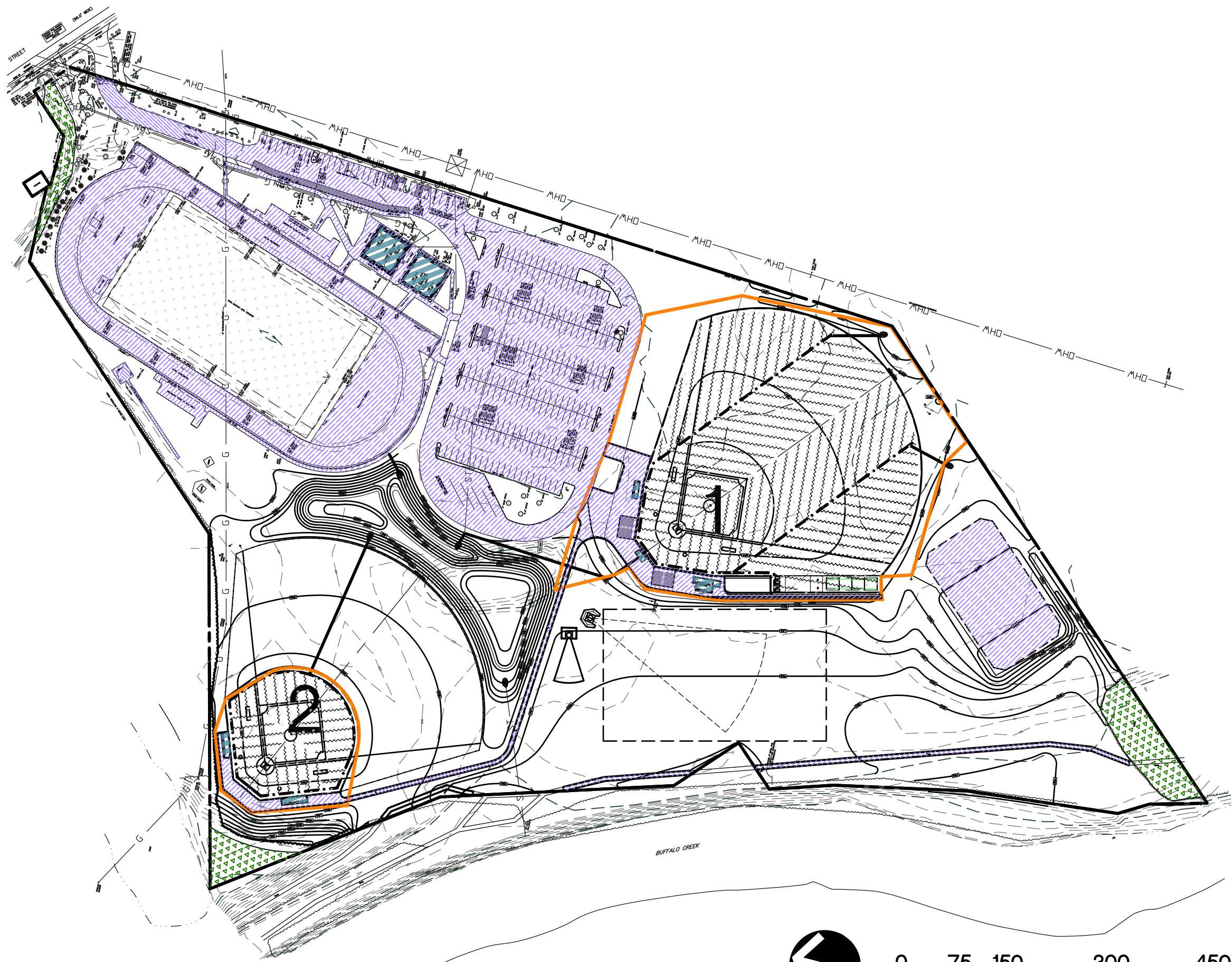
CANISIUS HS - PROPOSED WATERSHED



NORTH

0 75 150 300 450

SCALE IN FEET



CATCHMENT AREAS

LEGEND

- PAVEMENT
- ROOF
- SYNTHETIC TURF
- WOODS
- LAWN
- CATCHMENT BOUNDARY

'B' Soils = 100% of Site

1	SURFACE CONDITIONS =	4.62 Ac	CN
	PAVEMENT =	0.36 Ac	98
	ROOF =	0.02 Ac	98
	SYNTHETIC TURF =	3.16 Ac	85
	LAWN =	1.08 Ac	61

2	SURFACE CONDITIONS =	0.86 Ac	CN
	PAVEMENT =	0.09 Ac	98
	LAWN =	0.77 Ac	61

CANISIUS HS - CATCHMENTS

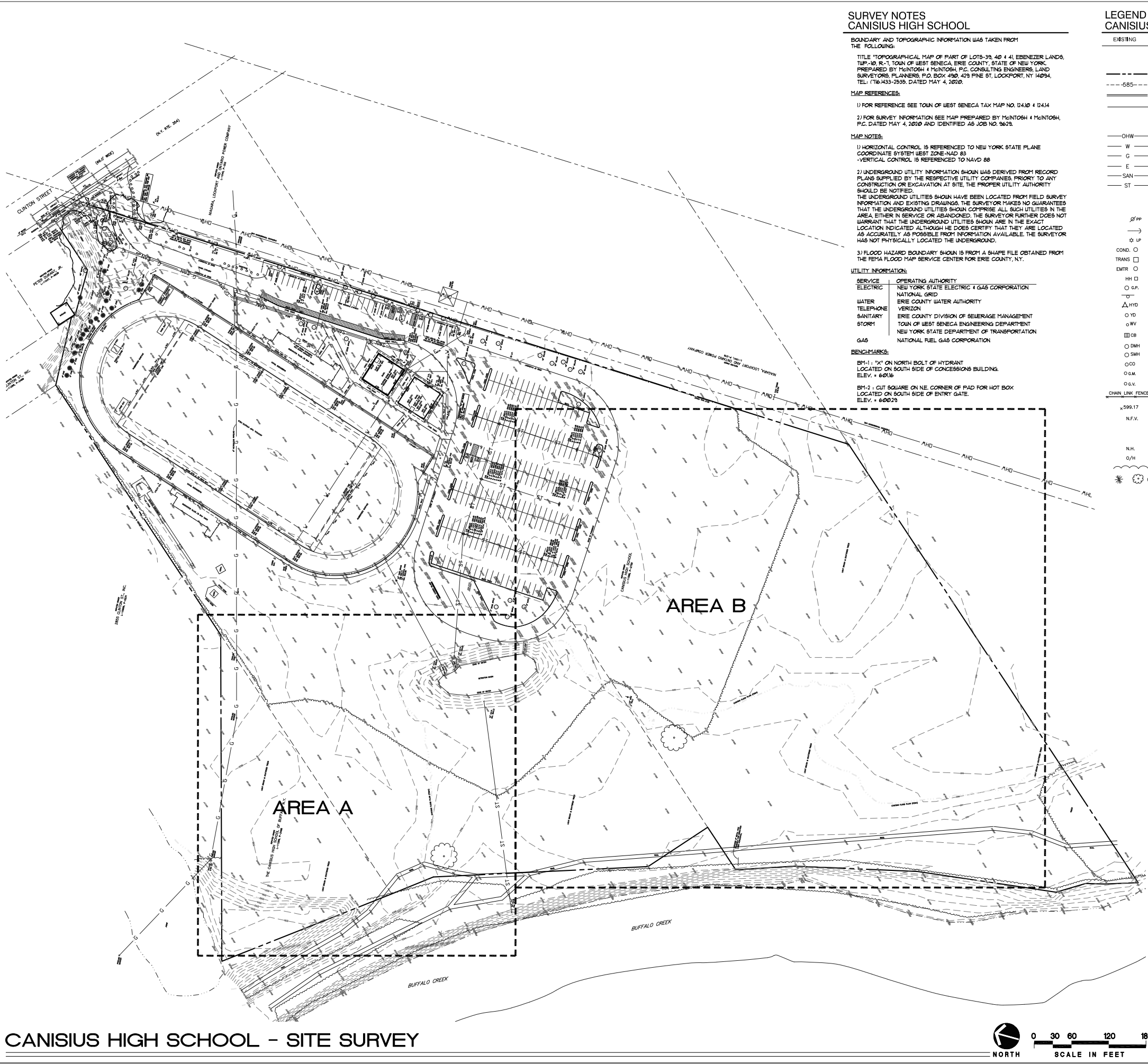


NORTH



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Professional Engineer
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Client: CANISIUS HIGH SCHOOL

Project: ATHLETIC FIELDS - PHASE 3

Project Address: ROBERT J. STRANSKY MEMORIAL COMPLEX
2885 CLINTON STREET
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Drawing History: # Date Description

#	Date	Description
1	5/24/2021	Planning Board Revisions

Project Status: PRELIMINARY


Date: 4/28/2021
Project Number: 20020
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SITE SURVEY


Sheet Number: C100



SITE PREPARATION PLAN - AREA B

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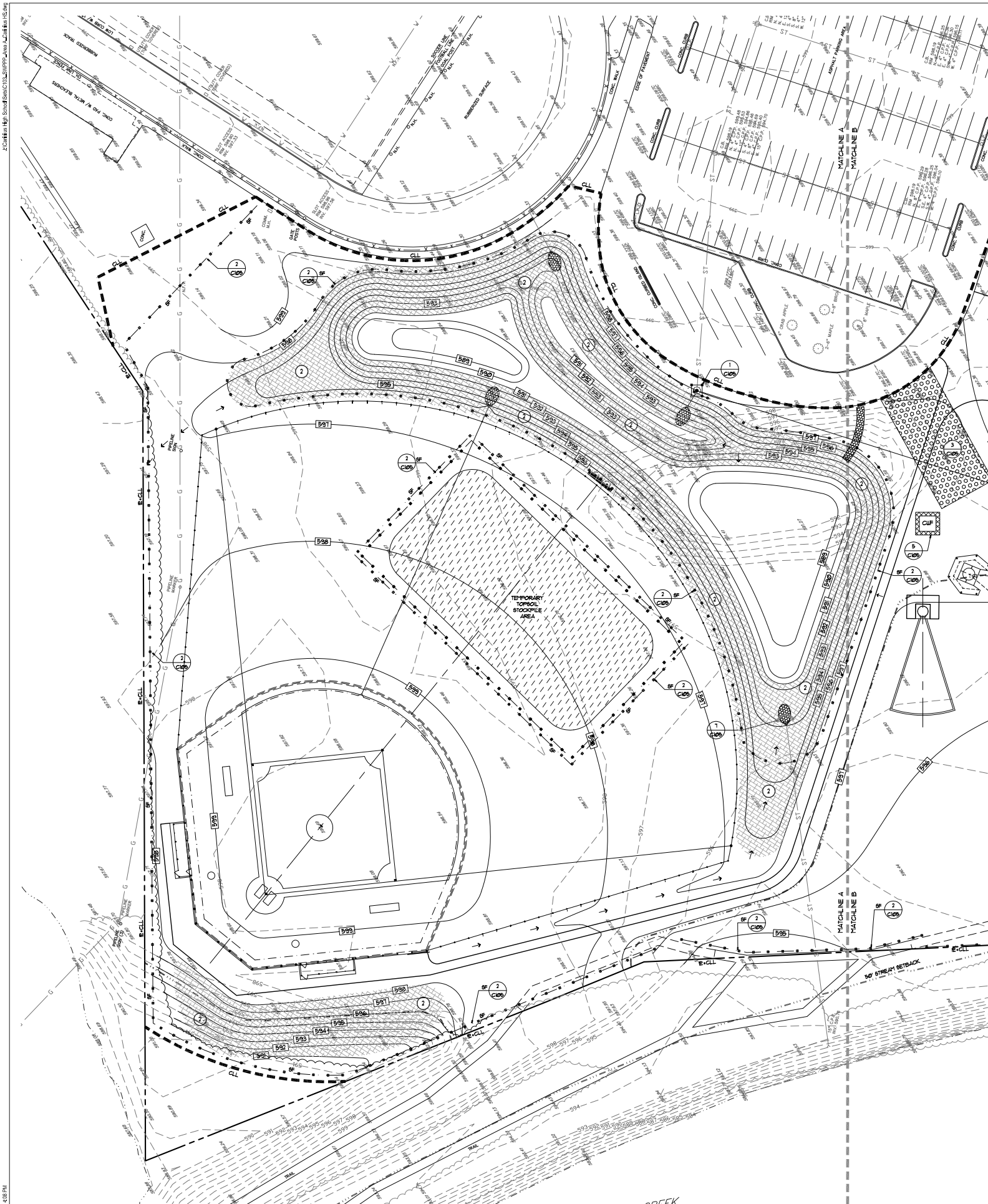
Client: CANISUS HIGH SCHOOL
Project: ATHLETIC FIELDS - PHASE 3

Project Address: ROBERT J. STRANSKY MEMORIAL COMPLEX
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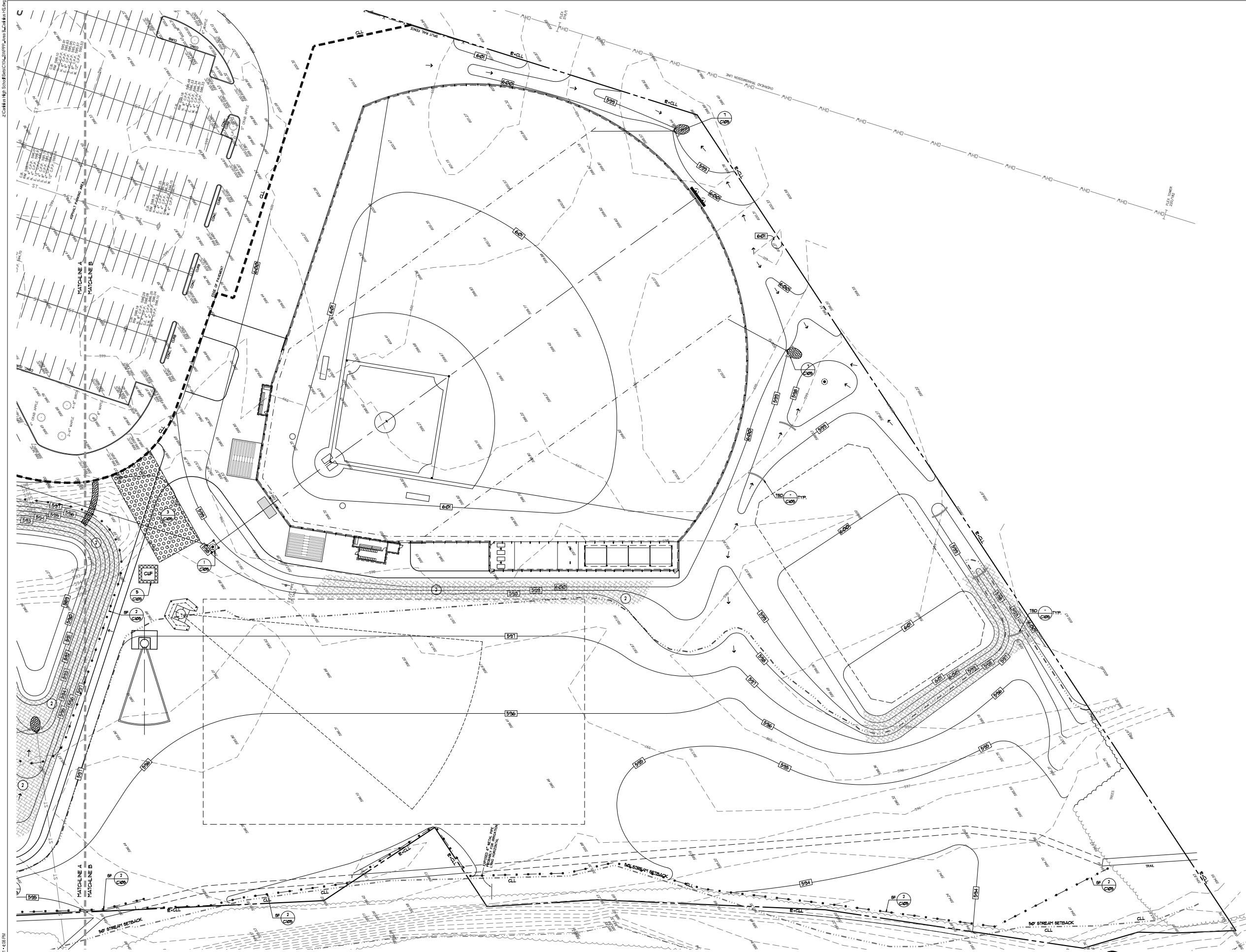
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#	Date	Description
#1	5/24/2021	Planning Board Revisions


Project Status: PRELIMINARY
Date: 4/28/2021
Project Number: 20020
Sheet Title:
SITE PREPARATION PLAN - AREA B
Sheet Number: C102



Sheet Number: C103




STORMWATER POLLUTION PREVENTION PLAN - AREA B




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Client: CANISIUS HIGH SCHOOL

Project: ATHLETIC FIELDS - PHASE 3

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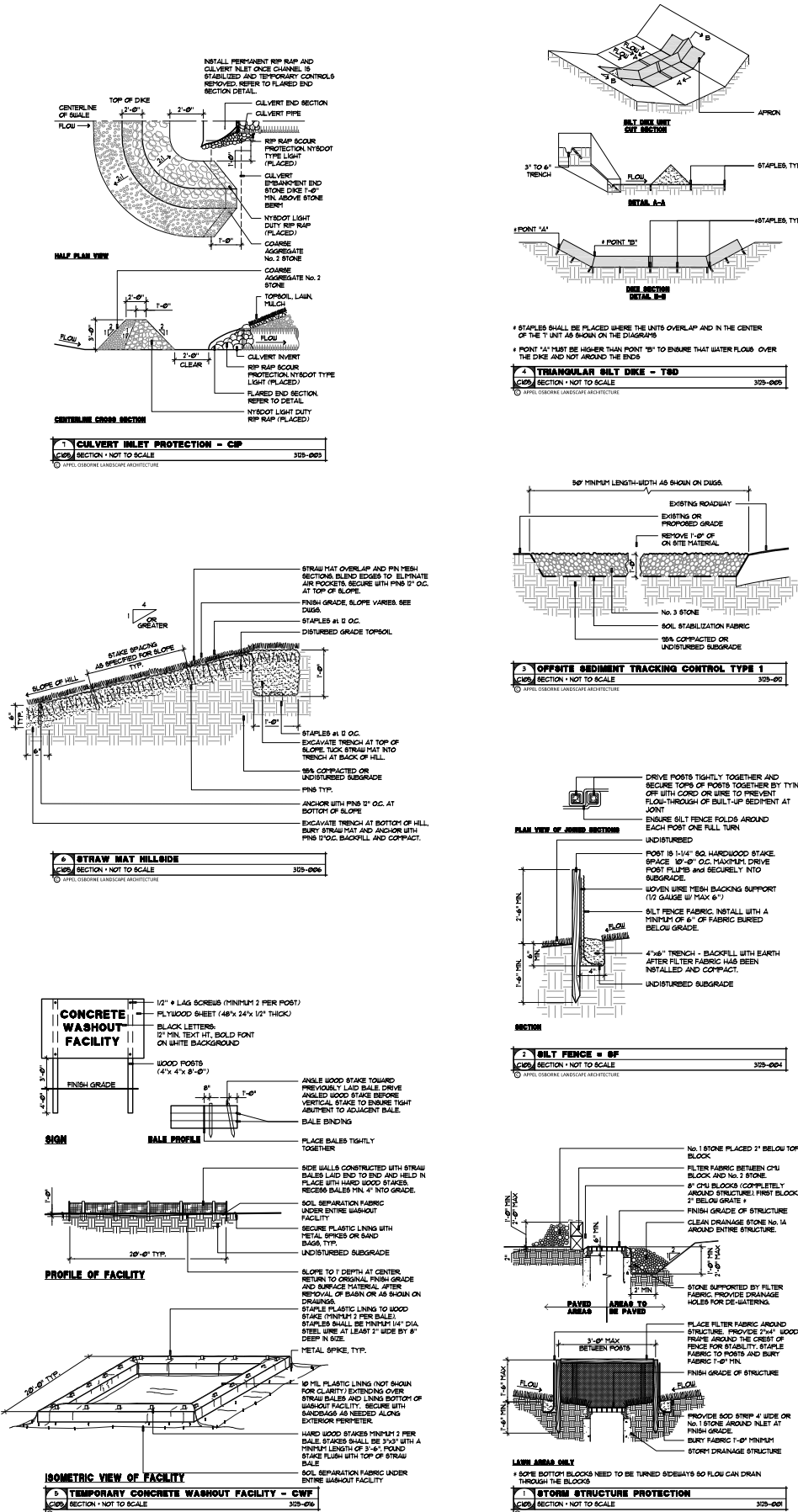
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#1	5/24/2021	Planning Board Revisions	

Project Status: PRELIMINARY

Date: 4/28/2021
Project Number: 20020
Sheet Title:

SWPPP PLAN - AREA B

Sheet Number: C104



STORMWATER POLLUTION PREVENTION PLAN NOTES

OBJECTIVE

PREVENTION OF EROSION AND POLLUTION FROM STORMWATER RUNOFF FOR THE DURATION OF THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL STORMWATER POLLUTION PREVENTION CONTROL WORK INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE INCLUDED IN THE SITE CONTRACTOR'S BASE BID. DAMAGES RESULTING FROM BUT NOT LIMITED TO NEGLIGENCE, IMPROPER MAINTENANCE OR GENERAL DISREGARD FOR EROSION CONTROL MEASURES SHALL BE IMMEDIATELY CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT, ENGINEER OR CERTIFIED EROSION CONTROL SPECIALIST HIRED BY THE OWNER FOR THE SWPPP INSPECTIONS AS REQUIRED BY THE NYSDDEC. DAMAGES RESULTING FROM OTHER CONTRACTORS SHALL BE REPAIRED BY THE SITE CONTRACTOR ON A TIME AND MATERIAL BASIS AND BE CHARGED TO THE RESPONSIBLE PARTY. ANY FINES LEVIED ON THE OWNER BY GOVERNING AUTHORITIES FOR SWPPP VIOLATIONS SHALL BE BACK CHARGED TO THE RESPONSIBLE PARTY.

SITE DESCRIPTION

PROJECT NAME AND LOCATION: CANISUS HIGH SCHOOL, ROBERT J STRANSKY MEMORIAL COMPLEX, 2885 CLINTON STREET, WEST SENeca, NY 14224

OWNER NAME AND ADDRESS: 180 DELAWARE AVENUE, BUFFALO, NY 14203

PROJECT DESCRIPTION: THE OWNER IS IN THE PROCESS OF OBTAINING APPROVAL FROM THE TOWN OF WEST SENeca PLANNING BOARD APPROVAL TO CONSTRUCT TWO BASEBALL FIELDS AND TENNIS COURTS AT THEIR EXISTING SPORTS CENTER. THIS PROJECT CONSISTS OF BUILDING, ATHLETIC, AND SITE RENOVATIONS OVER A SINGLE PHASE. SOIL DISTURBING ACTIVITIES SHALL INCLUDE: CLEARING AND GRUBBING, INSTALLING A STABILIZED CONSTRUCTION ENTRANCE, AND OTHER EROSION AND SEDIMENT CONTROLS, GRADING, EXCAVATION FOR THE PLAYFIELDS, PRESSBOX, DUGOUTS, AND PREPARATION FOR FINAL SEEDING. THE PROJECT IS SCHEDULED TO BEGIN IN THE SUMMER OF 2021 AND BE COMPLETED IN THE FALL OF 2021.

SITE AREA: THE SITE IS APPROXIMATELY 26.50+ ACRES OF WHICH 16.13+ ACRES SHALL BE DISTURBED BY CONSTRUCTION ACTIVITIES.

SEQUENCE OF MAJOR ACTIVITIES:

SEQUENCING OF THE SITE SHALL CORRESPOND WITH SITE PHASING PLAN SHEET.

- GENERAL:
1. INSTALL OFFSITE TRACKING AND TEMPORARY ACCESS ROAD.
 2. INSTALL SILT FENCE WHERE SHOWN AND ON DOWNHILL SLOPES.
 3. CONTINUE WITH SITE REMOVALS AND VEGETATION CLEARING.
 4. STRIP AND STOCKPILE TO AREAS INDICATED TEMPORARILY SEED AND PROTECT WITH SILT FENCE.
 5. INSTALL SEDIMENT BASIN TEMPORARY OUTLET TRAP AND UPPER SITE CUTOFF DRAINAGE. STABILIZE AREAS WITH TEMPORARY SEEDING AND TSD'S.
 6. INITIATE NECESSARY CUT AND FILLS TO SUBGRADE OF BUILDING AND SURROUNDS.
 7. INSTALL DRAINAGE, RETAINING WALLS, OTHER UTILITIES, STABILIZE SLOPES WITH STRAWMATS AS INDICATED.
 8. INSTALL SITE FEATURES INCLUDING STAIRS, RAMPS, PLAYSCAPES, FENCING, ETC.
 9. INSTALL ALL PAVEMENT SUBGRADES, CURBS, AND GUTTERS. INSTALL ASPHALT PAVING AND CONCRETE WALKS.
 10. SPREAD TOPSOIL ON BASEBALL FIELD AND ALL LAWN AREAS. CLEAN SILT OUT OF TEMPORARY SEDIMENT BASIN AND SEED.
 11. SEED AND SOO LAWN AREAS AS INDICATED, AND INSTALL PLANTINGS.
 12. FERTILIZE, WATER, AND MOW LAWN AREAS.
 13. REMOVE ALL MECHANICAL EROSION CONTROL AFTER LAWN IS STABILIZED.

NAME OF RECEIVING WATERS:

THE RUNOFF FROM THE SITE FLOWS INTO AN EXISTING UET POND WHICH IS REGULATED INTO BUFFALO CREEK. OVERFLOW IS DIRECTED INTO THE NEIGHBORING OXBOW THEN INTO BUFFALO CREEK.

CONTROLS

STABILIZATION PRACTICES

TEMPORARY STABILIZATION: STABILIZE TOPSOIL STOCKPILES AND DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 1 DAYS WITH TEMPORARY SEED AND MULCH. REFER TO SEEDING SPECIFICATIONS. AREAS OF THE SITE WHICH ARE TO BE PAVED SHALL BE TEMPORARILY STABILIZED BY APPLYING GEOTEXTILE AND STONE SUB-BASE UNTIL BITUMINOUS PAVEMENT CAN BE APPLIED.

PERMANENT STABILIZATION: STABILIZE DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES PERMANENTLY CEASES WITH PERMANENT SEED NO LATER THAN 1 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY. REFER TO SEEDING SPECIFICATIONS.

STORM WATER MANAGEMENT

STORMWATER DRAINAGE SHALL BE PROVIDED BY STORMWATER MANAGEMENT TRENCHES, DRYWELLS, IMPROVED TOPSOIL, ATHLETIC FIELDS, PROPOSED STORMWATER BASIN.

WASTE DISPOSAL

WASTE MATERIALS: COLLECT AND STORE ALL SITE RELATED WASTE MATERIALS. THE DUMPSTERS SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER SHALL BE EMPTIED A MINIMUM OF TWICE PER WEEK OR MORE OFTEN IF NECESSARY. NO BUILDING CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON-SITE.

HAZARDOUS MATERIALS: DISPOSE ALL SITE RELATED HAZARDOUS WASTE MATERIALS IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER.

SANITARY WASTE: DISPOSE ALL SANITARY WASTE FROM PORTABLE UNITS A MINIMUM OF THREE TIME PER WEEK OR AS REQUIRED BY LOCAL REGULATION.

OFF SITE VEHICLE TRACKING

PROVIDE STABILIZED CONSTRUCTION ENTRANCE TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. SWEEP THE PAVED STREET ADJACENT TO THE SITE ENTRANCE DAILY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE SHALL BE COVERED WITH A TARP. REPAIR OR REPLACE OFF SITE TRACKING STONE AS MUD OR DEBRIS IS ACCUMULATED.

TIMING OF CONTROLS / MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, THE TEMPORARY EROSION AND SEDIMENT CONTROLS, STABILIZED CONSTRUCTION ENTRANCES AND STAGING AREA SHALL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 1 DAYS SHALL BE STABILIZED WITH A TEMPORARY SEED AND MULCH. ONCE CONSTRUCTION ACTIVITY CEASED PERMANENTLY IN AN AREA, THAT AREA SHALL BE STABILIZED WITH PERMANENT LAWN. AFTER THE SITE IS STABILIZED, ANY ACCUMULATED SEDIMENT AND THE TEMPORARY CONTROLS SHALL BE REMOVED. ANY DISTURBED AREAS NOT STABILIZED PRIOR TO SNOW FALL SHALL RECEIVE DRY MULCH TO PROTECT DURING WINTER MONTHS.

CERTIFICATIONS

PRIOR TO STARTING CONSTRUCTION, THE GENERAL CONTRACTOR, SITE EARTHWORK CONTRACTOR, SITE LANDSCAPING CONTRACTOR AND OTHER SUBCONTRACTORS AS DETERMINED BY THE ARCHITECT SHALL SIGN CERTIFICATION NOTED IN SPECIFICATION 31.250.

ALL EROSION, SEDIMENT AND POLLUTION CONTROL MEASURES SHALL BE IMPLEMENTED AND MAINTAINED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDC) AND REQUIREMENTS FOR A STATE POLLUTION DISCHARGE ELIMINATION (SPDES) GENERAL PERMIT FOR STORMWATER DISCHARGE FOR CONSTRUCTION ACTIVITY. THE SPDES PERMIT (GP-0-20-001) IS PURSUANT TO THE NYSDC AND FEDERAL ENVIRONMENTAL CONSERVATION LAW AND HAS PENALTIES AND FINES RELATED TO VIOLATIONS.

MAINTENANCE / INSPECTION PROCEDURES

(INSPECTION ON EROSION CONTROLS SHALL BE PERFORMED BY THE LANDSCAPE ARCHITECT AND SITE CONTRACTOR WITH DEC CERTIFICATION)

1. INSPECT ALL CONTROL MEASURES AT LEAST ONCE EACH WEEK AND FOLLOWING ANY STORM EVENT OF 0.5 INCHES OR GREATER.
2. MAINTAIN ALL MEASURES IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, SITE CONTRACTOR SHALL INITIATE WITHIN 24 HOURS OF REPORT.
3. REMOVE BUILT UP SEDIMENT FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
4. INSPECT SILT FENCE FOR DEPTH OF SEDIMENT, TEARS, TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND.
5. INSPECT DIVERSION DIKE/ AND OR DITCHES AND REPAIR ANY BREACHES PROMPTLY.
6. INSPECT TEMPORARY AND PERMANENT SEEDING AND PLANTING FOR BARE SPOTS, WASHOUT, AND HEALTHY GROWTH.
7. PREPARE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION.
8. THE OWNER'S PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE ARCHITECT AND CONTRACTOR. THEY SHALL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT AND WATER QUANTITY AND QUALITY SYSTEMS CONTROLS USED ON-SITE IN GOOD WORKING ORDER.

INVENTORY FOR POLLUTION PREVENTION PLAN

MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ON-SITE DURING CONSTRUCTION:

- CONCRETE
- CLEANING SOLVENTS
- FERTILIZERS
- HYDRAULIC BLOCK
- DETERGENTS
- WOOD
- PETROLEUM BASED PRODUCTS
- ASPHALT
- PAINTS (ENAMEL AND LATEX)
- TISC. CONSTRUCTION MATERIALS

SPILL PREVENTION

1. THE FOLLOWING GOOD HOUSEKEEPING PRACTICES SHALL BE FOLLOWED ON-SITE DURING THE CONSTRUCTION PROJECT:
 - STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
 - STORE ALL MATERIALS STORED ON-SITE IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
 - KEEP PRODUCTS IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
 - WHENEVER POSSIBLE, USE UP ALL OF A PRODUCT BEFORE DISPOSING OF THE CONTAINER.
 - FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL.
 - INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ON-SITE.
2. THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
 - KEEP PRODUCTS IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
 - RETAIN ORIGINAL LABELS AND MATERIAL SAFETY DATA. THEY CONTAIN IMPORTANT PRODUCT INFORMATION.
 - IF SURPLUS PRODUCT MUST BE DISPOSED OF FOLLOW MANUFACTURER'S OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL.
3. MONITOR ALL ON-SITE VEHICLES FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED OSHA APPROVED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ON-SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S AND ARCHITECT'S RECOMMENDATIONS.
4. APPLY FERTILIZERS USED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER AND ARCHITECT. ONCE APPLIED, FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER RUNOFF. STORAGE SHALL BE IN COVERED STORAGE. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
5. SEAL AND STORE ALL PAINT CONTAINERS TIGHTLY WHEN NOT REQUIRED FOR USE. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
6. CONCRETE AND ASPHALT TRUCKS SHALL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRY WASH WATER ON THE SITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT FACILITY.

SWPPP LEGEND

SYMBOL	DESCRIPTION
	STRAW MAT HILLSIDE / SIALE
	LAIN TYPE (SEE SPEC)
	EXISTING CONTOUR
	PROPOSED CONTOUR
	SILT FENCE
	OFF SITE TRACKING CONTROL CONSTRUCTION ENTRY/EXIT
	TEMPORARY FABRIC INLET PROTECTION
	TOPSOIL STOCKPILE AREA
	CONCRETE WASHOUT FACILITY
	TRIANGLE SILT DIKE
	TREE PROTECTION
	EXISTING VEGETATION PROTECTION
	CULVERT PROTECTION
	LIMITS OF TEMPORARY OUTLET SEDIMENT TRAPS
	AREAS OF DEEP-RIPPING AND DECOMPOSITION

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Client: CANISUS HIGH SCHOOL

Project: ATHLETIC FIELDS - PHASE 3

Project Address: ROBERT J. STRANSKY MEMORIAL COMPLEX
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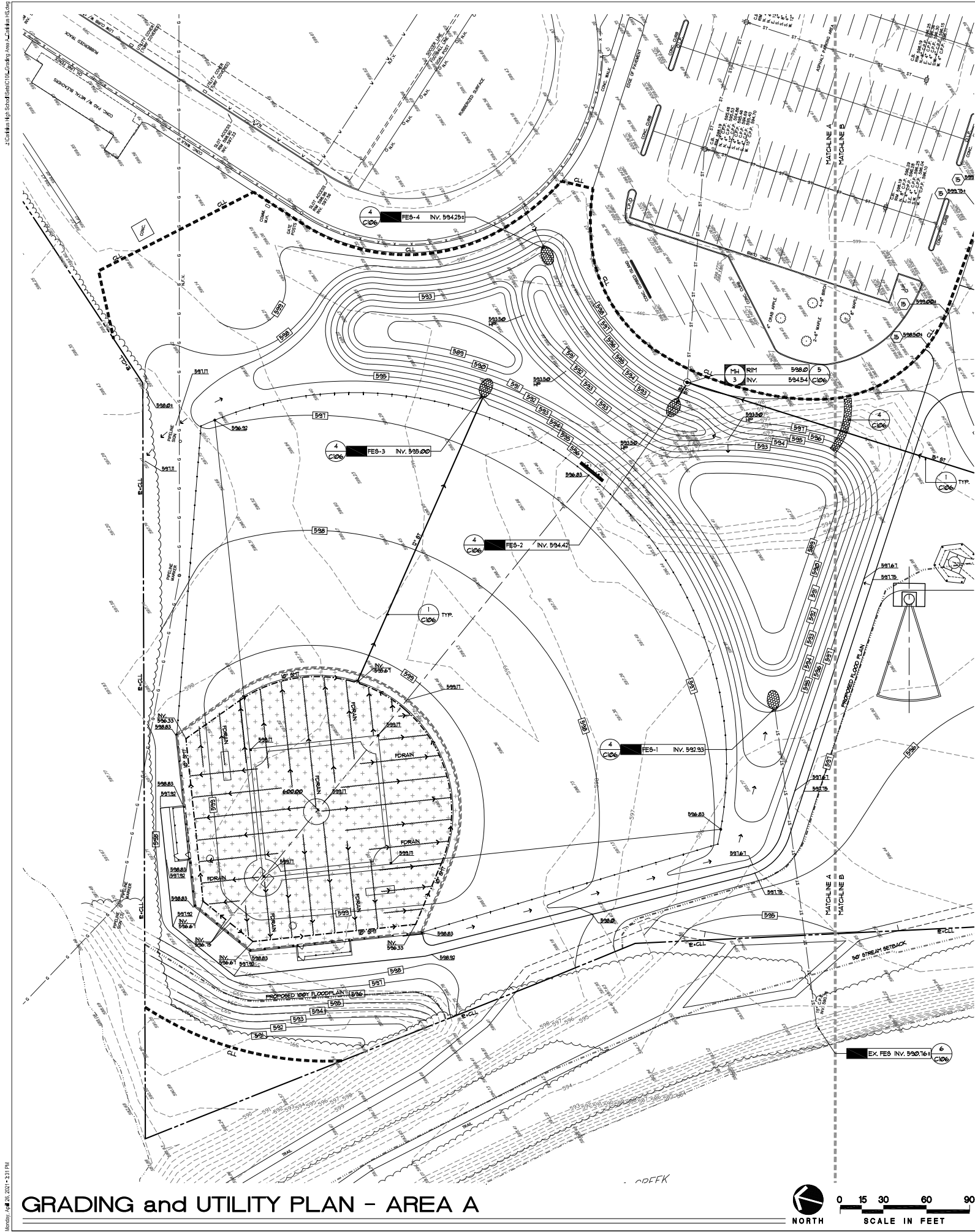
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SWPPP DETAILS

Sheet Number: C105

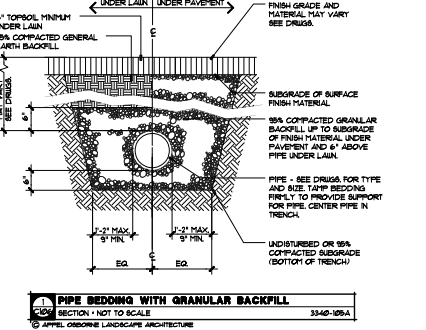
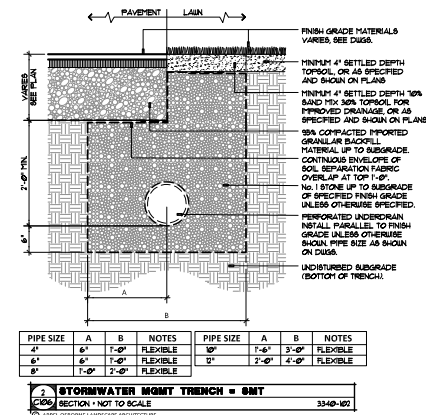
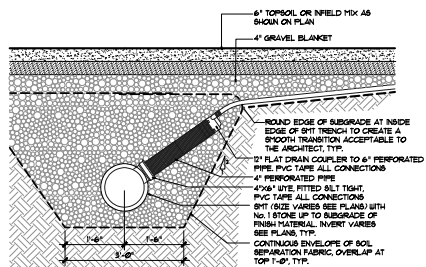
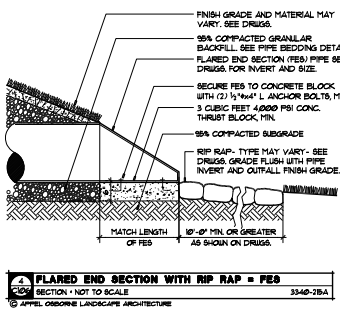
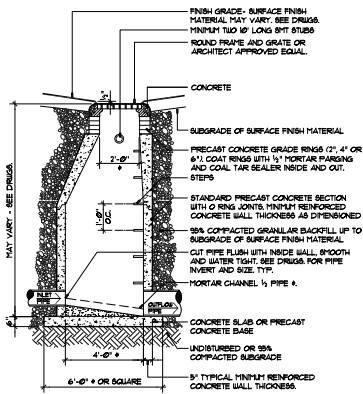
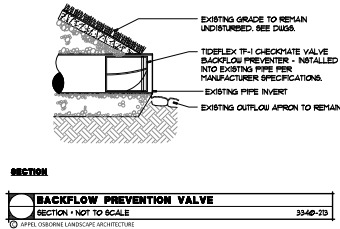


GRADING and UTILITY PLAN - AREA A

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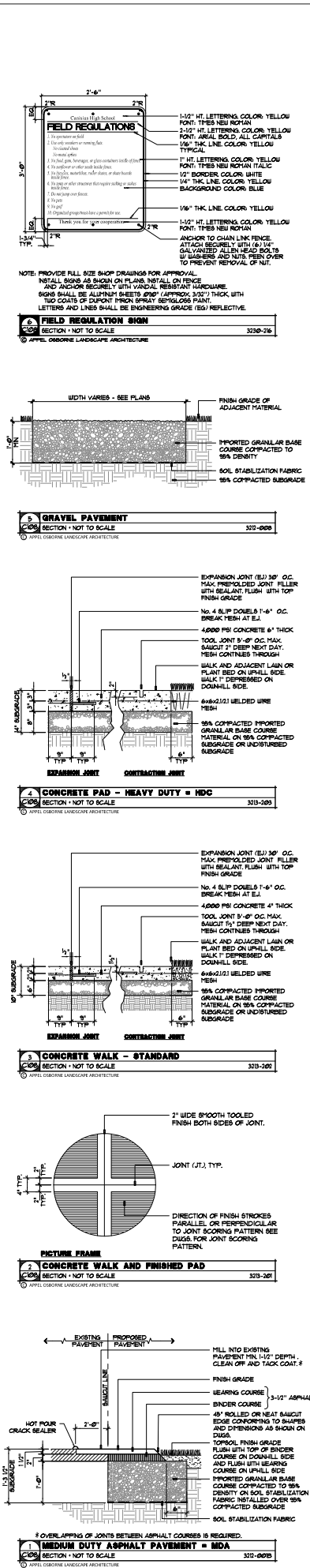
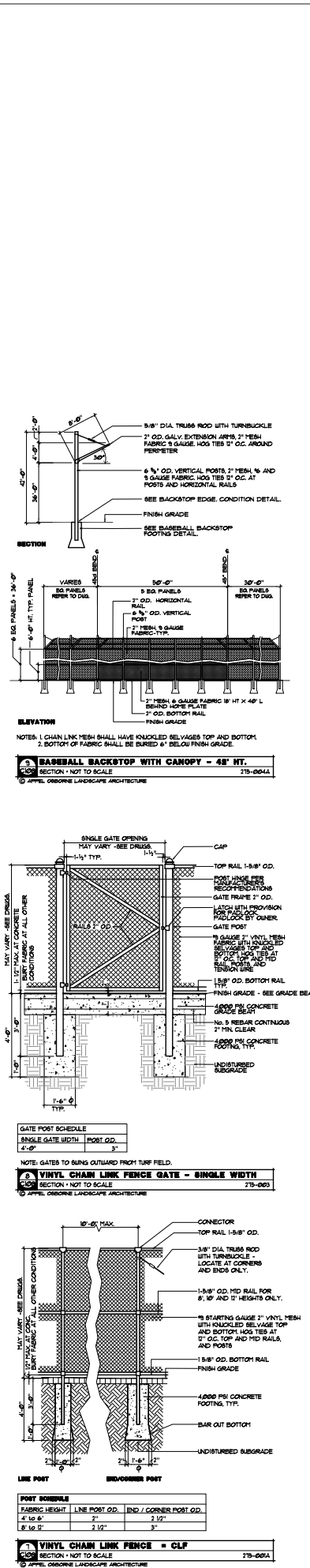
Project: ATHLETIC FIELDS - PHASE 3

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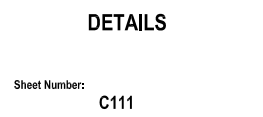
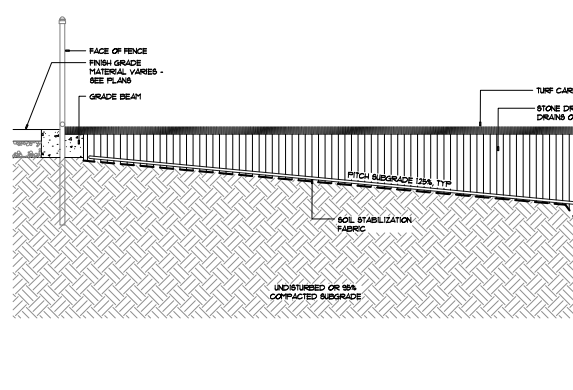
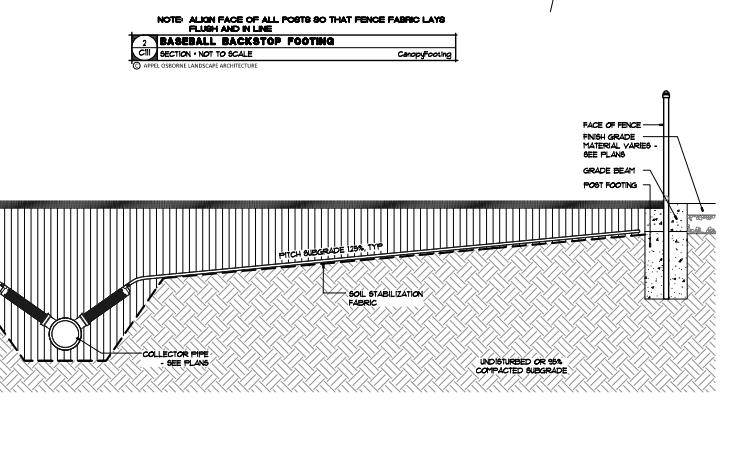
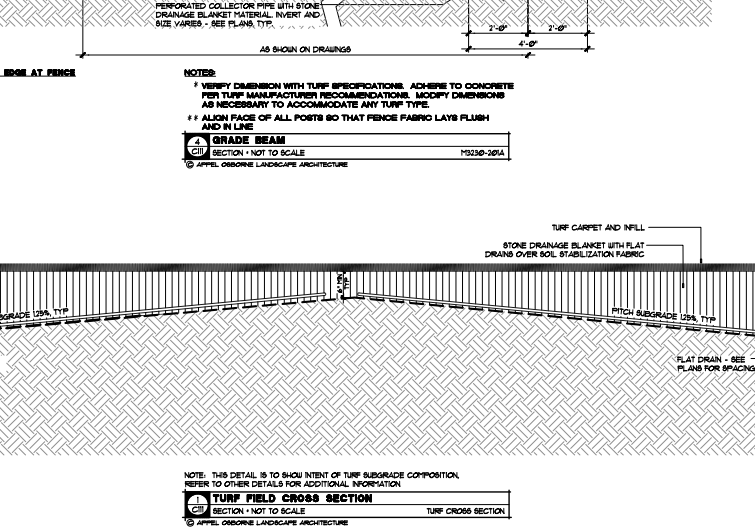
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Sheet Number: C106



DETAILS



SECTION 6 - CALCULATIONS

- Proposed Watershed CPv Calculations
- Proposed Watershed WQv Calculations
- Hydraflow Hydrographs Reports- Existing
- Hydraflow Hydrographs Reports- Proposed
- Proposed Stormwater Basin Stage Storage Curves and Outlet Structure



Project: Canisius HS - Watershed B
Computed By: BB
Checked By: BB
Date: 4/26/2021
Purpose: To calculate the 24 hour detention of the 1 year storm.

Design Storm 1-YEAR (in) 1.83

1. Curve Number from TR-55 Calculations:

CN = 80

2. Calculate initial abstraction:

$$I_a = (200 / CN) - 2$$

$I_a = 0.5000$

3. Using the P value for the one year storm determine I_a/P :

$P = 1.83$

$I_a/P = 0.2732$

4. Use Exhibit's 4-I through III, based on type of rainfall distribution, in TR-55 Manual to calculate unit peak discharge (q_u).

$T_c = 0.38$ hours

$q_u = 650$ csm/in

5. Use T_c from TR-55 and Figure 8.5 in NYS SWDM for the 24 hour storm event to find Ratio of Outflow to Inflow (q_o/q_i):

$q_o/q_i = 0.03$

6. Calculate water quantity storage required:

$$V_s/V_r = 0.683 - 1.43 (q_o/q_i) + 1.64 (q_o/q_i)^2 - 0.804 (q_o/q_i)^3$$

$V_s/V_r = 0.6416$

7. Solve for V_s :

$$V_s = C_{pv} = (V_s/V_r * Q * A) / 12$$

$A = 18.65$ acres

$Q = (P - I_a)^2 / (P + 4 * I_a) = 0.4619$ inches

$V_s = 0.4605$ acre-feet 20060 cf of overall storage is required

8. Average release rate over 24 hours:

$(V_s \text{ ac-ft} * 43560 \text{ ft/ac}) / (24 \text{ hr} * 3600 \text{ sec/hr}) = 0.23 \text{ cfs is the allowable average release rate for the 1 year storm, 24 hour storm event}$

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....

Design Point: B
P= 0.85 inch

Breakdown of Subcatchments						
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Description
1	4.62	0.38	8%	0.12	1,768	
2	0.86	0.09	10%	0.14	380	
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-10)	5.48	0.47	9%	0.13	2,148	Subtotal 1
Total	5.48	0.47	9%	0.13	2,148	Initial WQv

0.05 af

Identify Runoff Reduction Techniques By Area			
Technique	Total Contributing Area	Contributing Impervious Area	Notes
	(Acre)	(Acre)	
Conservation of Natural Areas	0.00	0.00	minimum 10,000 sf
Riparian Buffers	0.00	0.00	maximum contributing length 75 feet to 150 feet
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	Up to 100 sf directly connected impervious area may be subtracted per
Total	0.00	0.00	

Recalculate WQv after application of Area Reduction Techniques					
	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft ³)
"<<Initial WQv"	5.48	0.47	9%	0.13	2,148
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	5.48	0.47	9%	0.13	2,148
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	5.48	0.47	9%	0.13	2,148
WQv reduced by Area Reduction techniques					0

0.05 af

0.00 af

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techniques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	5.48	0.47	1805	342
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2	13.17	5.43		19975.000
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4)	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2)	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			5.48	0.47	1805	342
Totals by Standard SMP →			13.17	5.43		19975
Totals (Area + Volume + all SMPs) →			18.65	5.90	1,805	20,317
	Impervious Cover v	error				
	Total Area v	error				

Minimum RRv

Enter the Soils Data for the site

Soil Group	Acres	S
A		55%
B	18.27	40%
C		30%
D		20%
Total Area	18.27	

Calculate the Minimum RRv

S =	0.40	
Impervious =	0.47	acre
Precipitation	0.85	in
Rv	0.95	
Minimum RRv	550	ft3
	0.01	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	2148	0.049
30	Total RRV Provided	1805	0.041
31	Is RRV Provided \geq WQv Required?	No	
32	Minimum RRV	550	0.013
32a	Is RRV Provided \geq Minimum RRV Required?	Yes	
33a	Total WQv Treated	20317	0.466
34	Sum of Volume Reduced & Treated	22123	0.508
34	Sum of Volume Reduced and Treated	22123	0.508
35	Is Sum RRV Provided and WQv Provided \geq WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	C_{pv}	
37	Overbank	Q_p	
37	Extreme Flood Control	Q_f	
	Are Quantity Control requirements met?	Yes	Plan Completed

Infiltration Trench Worksheet

Design Point:	B						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
1	4.62	0.38	0.08	0.12	1767.99	0.85	
Enter Impervious Area Reduced		0.00	8%	0.12	1,768	<<WQv after adjusting for	
Design Elements							
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			0.50	in/hr	Okay		
Pretreatment Sizing			25%	of WQv	25% minimum 50% if >2 in/hr; 100% if >5in/hour		
Required Pretreatment Volume			442	ft ³			
Pretreatment Provided			95	ft ³	Inadequate Pretreatment Provided		
Pretreatment techniques utilized			Turf Infill/Stone		Pretreatment can be provided in the form of a sedimentation basin, sump pit, grass channel, plunge pool or other measure		
Size the Infiltration Trench							
Ap = Vw / (ndt)							
Design Volume		Vw	1,768	ft ³			
Porosity		n	0				
Design Depth		dt	2.0	ft	maximum of four feet		
Depth to Groundwater			5.0	ft	>3 feet from seasonally high water table		
Required Surface Area		Ap	2210	ft ²			
Width		W	4	ft	Provide the dimensions here		
Length		L	495	ft	Provide the dimensions here		
Surface Area Provided			1980	ft ²	Insufficient Surface Area		
Volume Provided			1,584	ft ³	Storage Volume provided in infiltration trench not including pretreatment.		
Determine Runoff Reduction							
RRv	1,426	ft³	90% of the storage provided				
Volume Treated	342	ft ³	This is the portion of the WQv that is not reduced/infiltrated				

Infiltration Trench Worksheet

Design Point:	B						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
2	0.86	0.09	0.10	0.14	380	0.85	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	10%	0.14	380	<<WQv after adjusting for Disconnected Rooftops	
Design Elements							
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			0.50	in/hr	Okay		
Pretreatment Sizing			25%	of WQv	25% minimum 50% if >2 in/hr; 100% if >5in/hour		
Required Pretreatment Volume			95	ft ³			
Pretreatment Provided			442	ft ³			
Pretreatment techniques utilized			Turf Infill/Stone		Pretreatment can be provided in the form of a sedimentation basin, sump pit, grass channel, plunge pool or other measure		
Size the Infiltration Trench							
Ap = Vw / (ndt)							
Design Volume		Vw	380	ft ³			
Porosity		n	0.4				
Design Depth		dt	2.0	ft	maximum of four feet		
Depth to Groundwater			5.0	ft	>3 feet from seasonally high water table		
Required Surface Area		Ap	475	ft ²			
Width		W	4	ft	Provide the dimensions here		
Length		L	266	ft	Provide the dimensions here		
Surface Area Provided			1064	ft ²	Okay		
Volume Provided			851	ft ³	Storage Volume provided in infiltration trench not including pretreatment.		
Determine Runoff Reduction							
RRv	380	ft³	90% of the storage provided				
Volume Treated	0	ft ³	This is the portion of the WQv that is not reduced/infiltrated				

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021



Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	0.042	-----	-----	-----	0.750	1.275	-----	2.462	Ex_WS-A
2	SCS Runoff	-----	5.146	-----	-----	-----	16.79	23.95	-----	38.90	Ex_WS-B
3	SCS Runoff	-----	0.011	-----	-----	-----	1.232	2.768	-----	6.473	Ex_WS-C
4	SCS Runoff	-----	0.050	-----	-----	-----	2.889	6.268	-----	15.10	Ex_WS-D
5	SCS Runoff	-----	0.004	-----	-----	-----	0.257	0.559	-----	1.328	Ex_WS-E

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

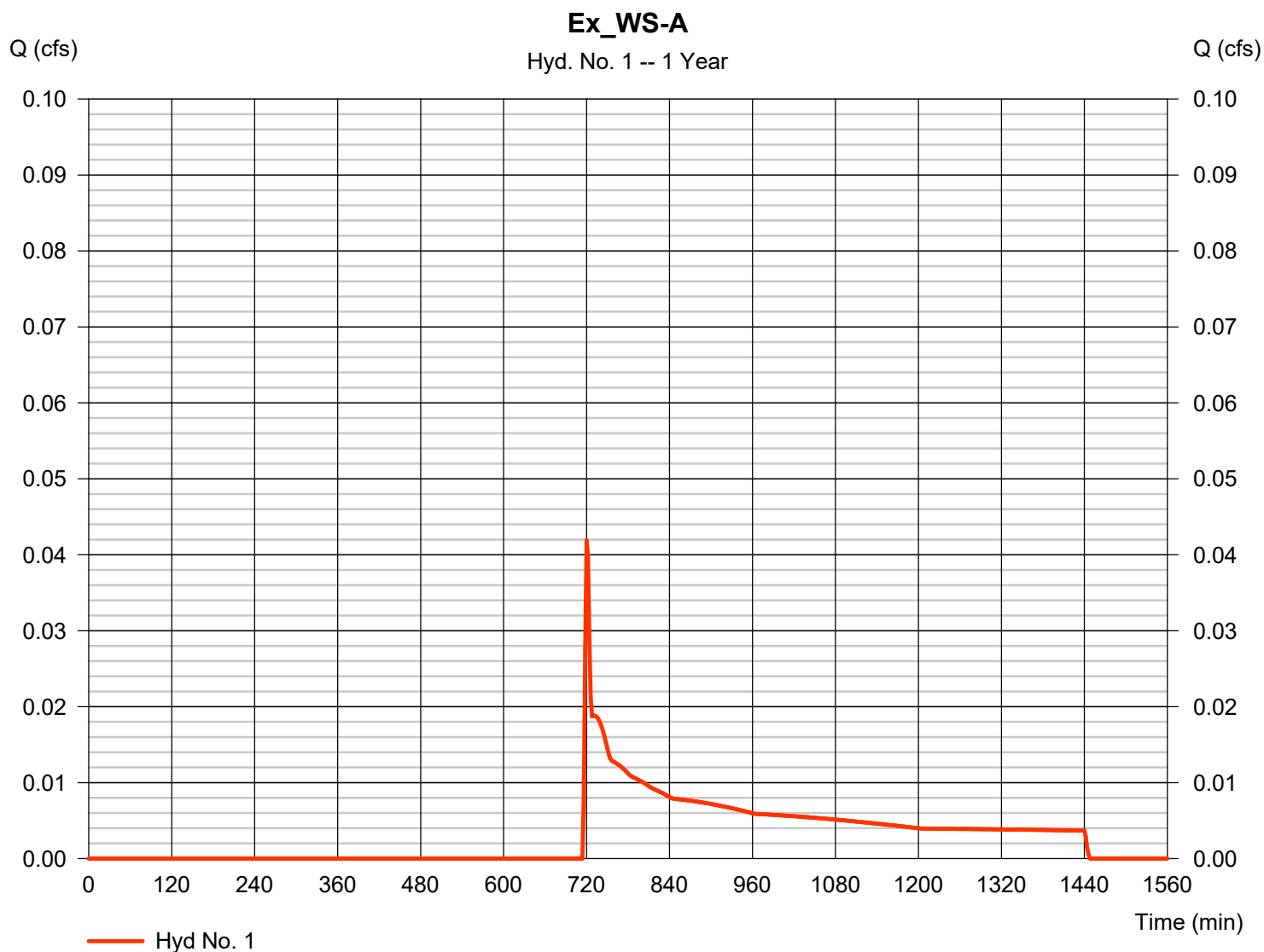
Tuesday, 05 / 25 / 2021

Hyd. No. 1

Ex_WS-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 282 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

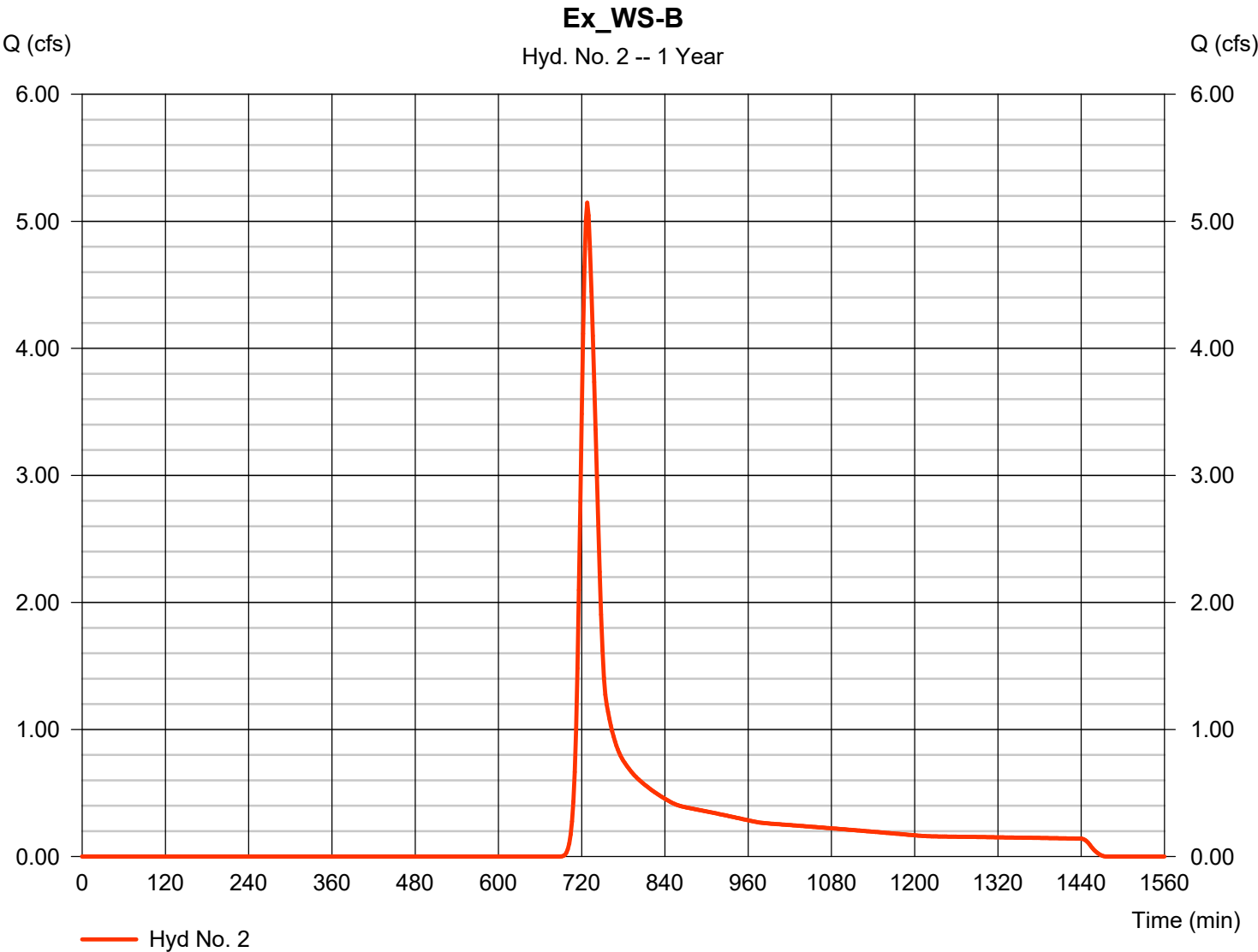
Tuesday, 05 / 25 / 2021

Hyd. No. 2

Ex_WS-B

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.146 cfs
Storm frequency	=	1 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	20,102 cuft
Drainage area	=	11.780 ac	Curve number	=	80*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	21.00 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.880 x 98) + (0.110 x 98) + (1.780 x 85) + (5.010 x 61)] / 11.780



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 2

Ex_WS-B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 0.70	0.00	0.00				
Travel Time (min)	= 17.98	+	0.00	+	0.00	=	17.98
Shallow Concentrated Flow							
Flow length (ft)	= 297.00	55.00	0.00				
Watercourse slope (%)	= 1.16	9.07	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=1.74	4.86	0.00				
Travel Time (min)	= 2.85	+	0.19	+	0.00	=	3.04
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	((0})0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				21.00 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

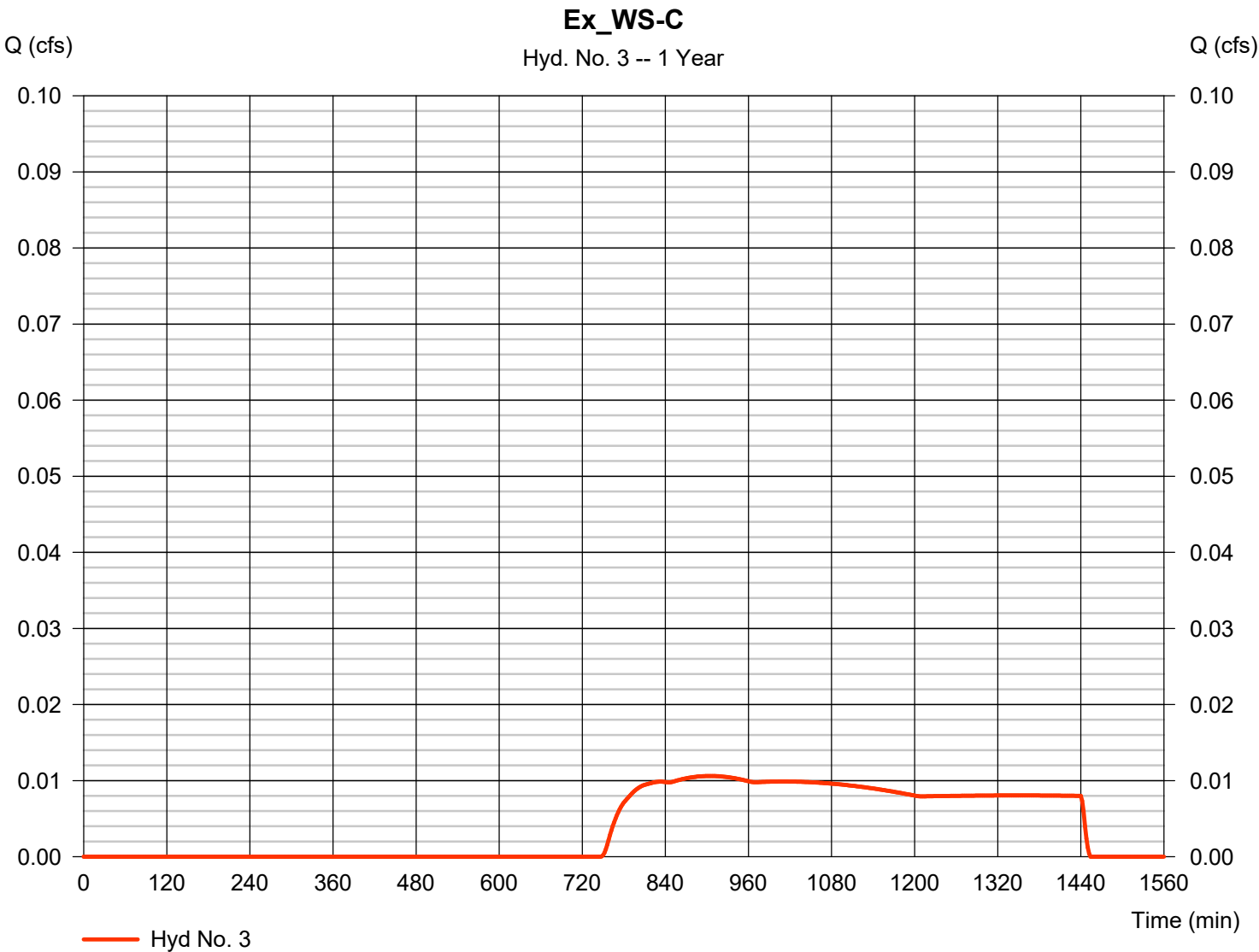
Tuesday, 05 / 25 / 2021

Hyd. No. 3

Ex_WS-C

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.011 cfs
Storm frequency	=	1 yrs	Time to peak	=	904 min
Time interval	=	2 min	Hyd. volume	=	368 cuft
Drainage area	=	2.940 ac	Curve number	=	60*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	8.70 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 98) + (0.730 x 55) + (2.200 x 61)] / 2.940



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 3

Ex_WS-C

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00	
Land slope (%)	= 6.80	0.00	0.00	
Travel Time (min)	= 7.24	+	0.00	+
			0.00	= 7.24
Shallow Concentrated Flow				
Flow length (ft)	= 200.00	0.00	0.00	
Watercourse slope (%)	= 2.00	0.00	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=2.28	0.00	0.00	
Travel Time (min)	= 1.46	+	0.00	+
			0.00	= 1.46
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	(0)0.0	0.0	0.0	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Total Travel Time, Tc				8.70 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

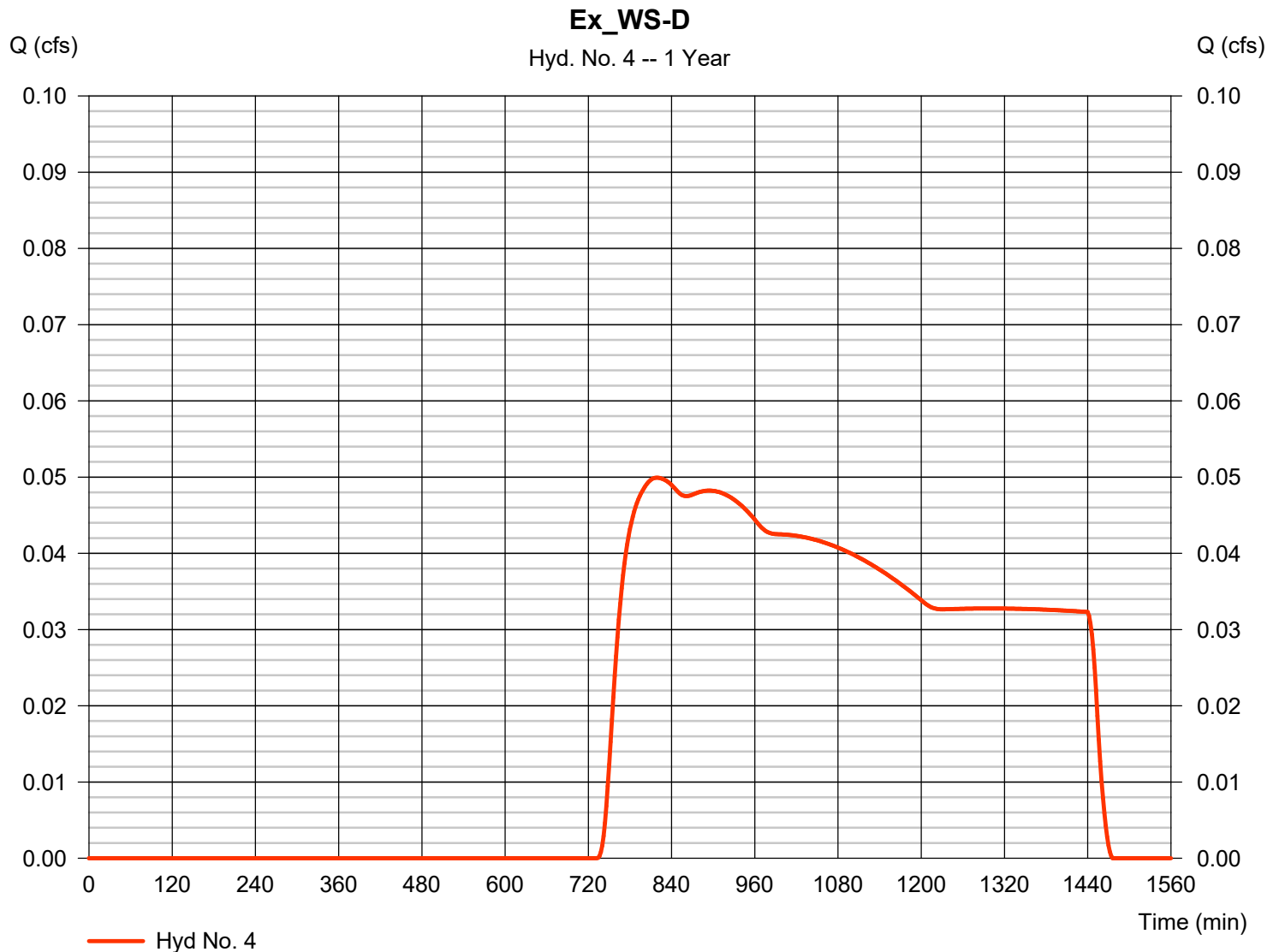
Tuesday, 05 / 25 / 2021

Hyd. No. 4

Ex_WS-D

Hydrograph type	= SCS Runoff	Peak discharge	= 0.050 cfs
Storm frequency	= 1 yrs	Time to peak	= 818 min
Time interval	= 2 min	Hyd. volume	= 1,653 cuft
Drainage area	= 10.220 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.20 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.250 \times 55) + (9.970 \times 61)] / 10.220$



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 4

Ex_WS-D

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00	
Land slope (%)	= 0.97	0.00	0.00	
Travel Time (min)	= 15.78	+ 0.00	+ 0.00	= 15.78
Shallow Concentrated Flow				
Flow length (ft)	= 628.09	0.00	0.00	
Watercourse slope (%)	= 1.01	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=1.62	0.00	0.00	
Travel Time (min)	= 6.46	+ 0.00	+ 0.00	= 6.46
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	(0)0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				22.20 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

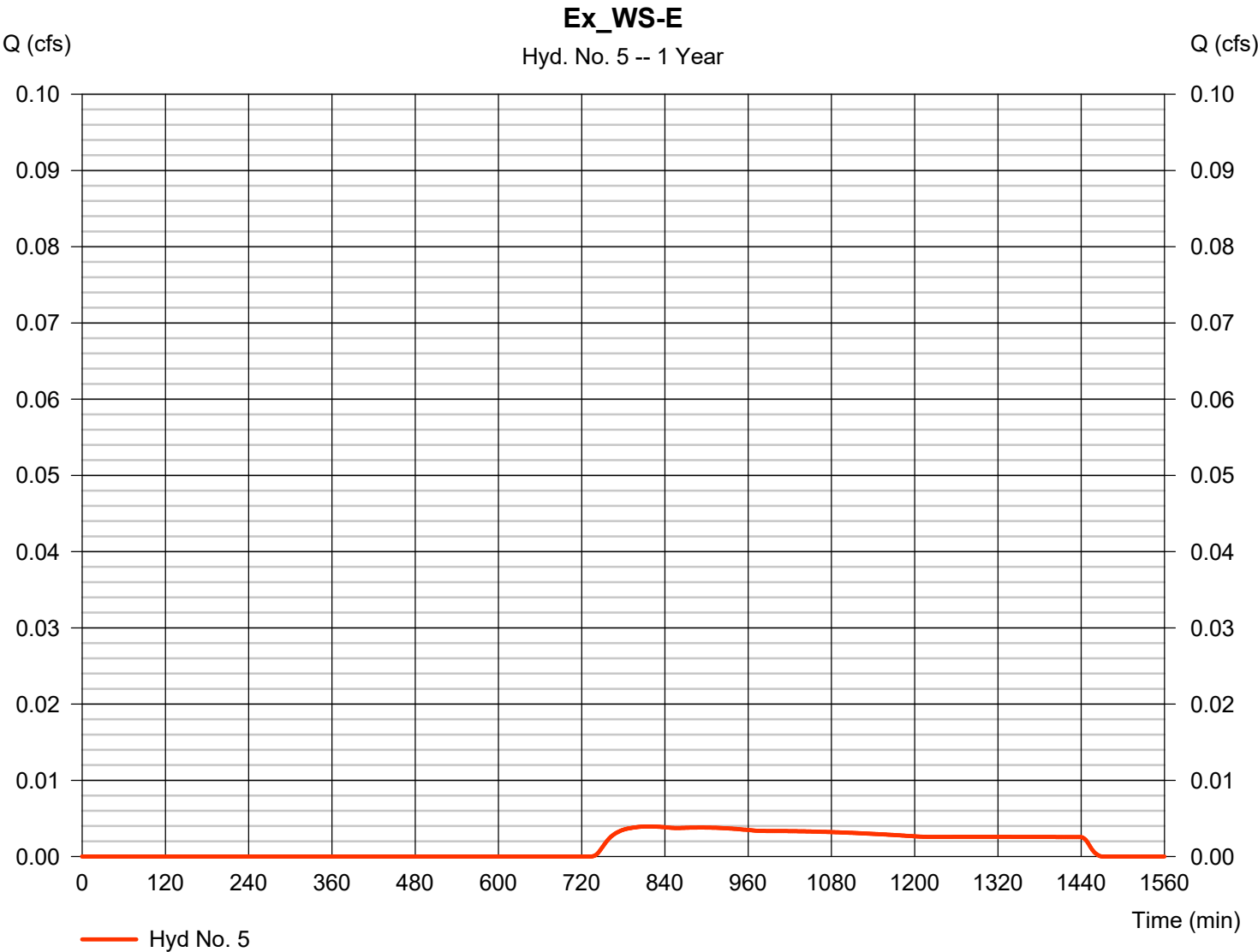
Tuesday, 05 / 25 / 2021

Hyd. No. 5

Ex_WS-E

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	1 yrs	Time to peak	=	814 min
Time interval	=	2 min	Hyd. volume	=	130 cuft
Drainage area	=	0.820 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.80 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.820 x 61)] / 0.820



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 5

Ex_WS-E

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00	
Land slope (%)	= 0.72	0.00	0.00	
Travel Time (min)	= 17.78	+	0.00	+
			0.00	= 17.78
Shallow Concentrated Flow				
Flow length (ft)	= 113.00	0.00	0.00	
Watercourse slope (%)	= 1.20	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=1.77	0.00	0.00	
Travel Time (min)	= 1.07	+	0.00	+
			0.00	= 1.07
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	(0)0.0	0.0	0.0	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Total Travel Time, Tc				18.80 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

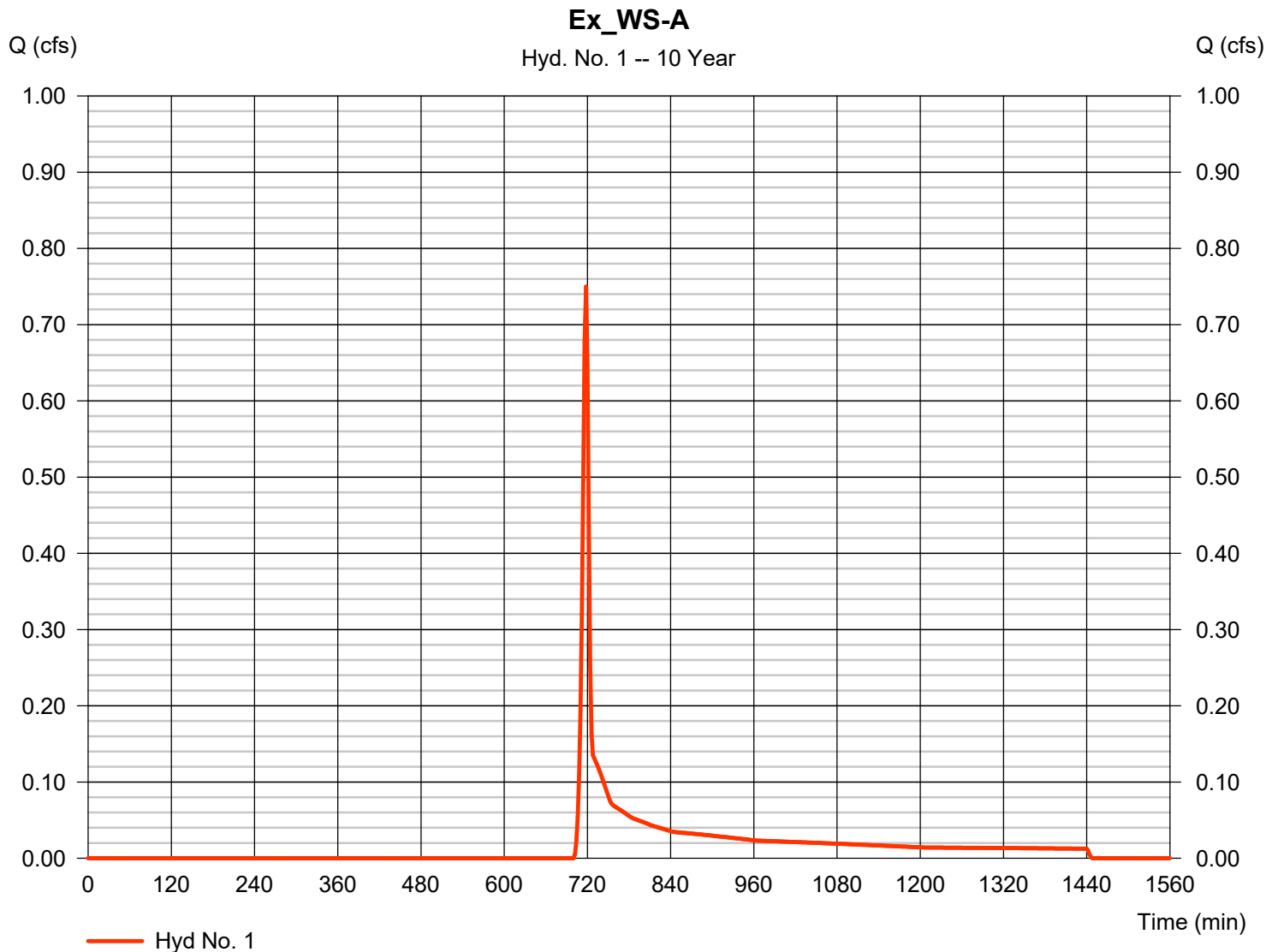
Tuesday, 05 / 25 / 2021

Hyd. No. 1

Ex_WS-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.750 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,606 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

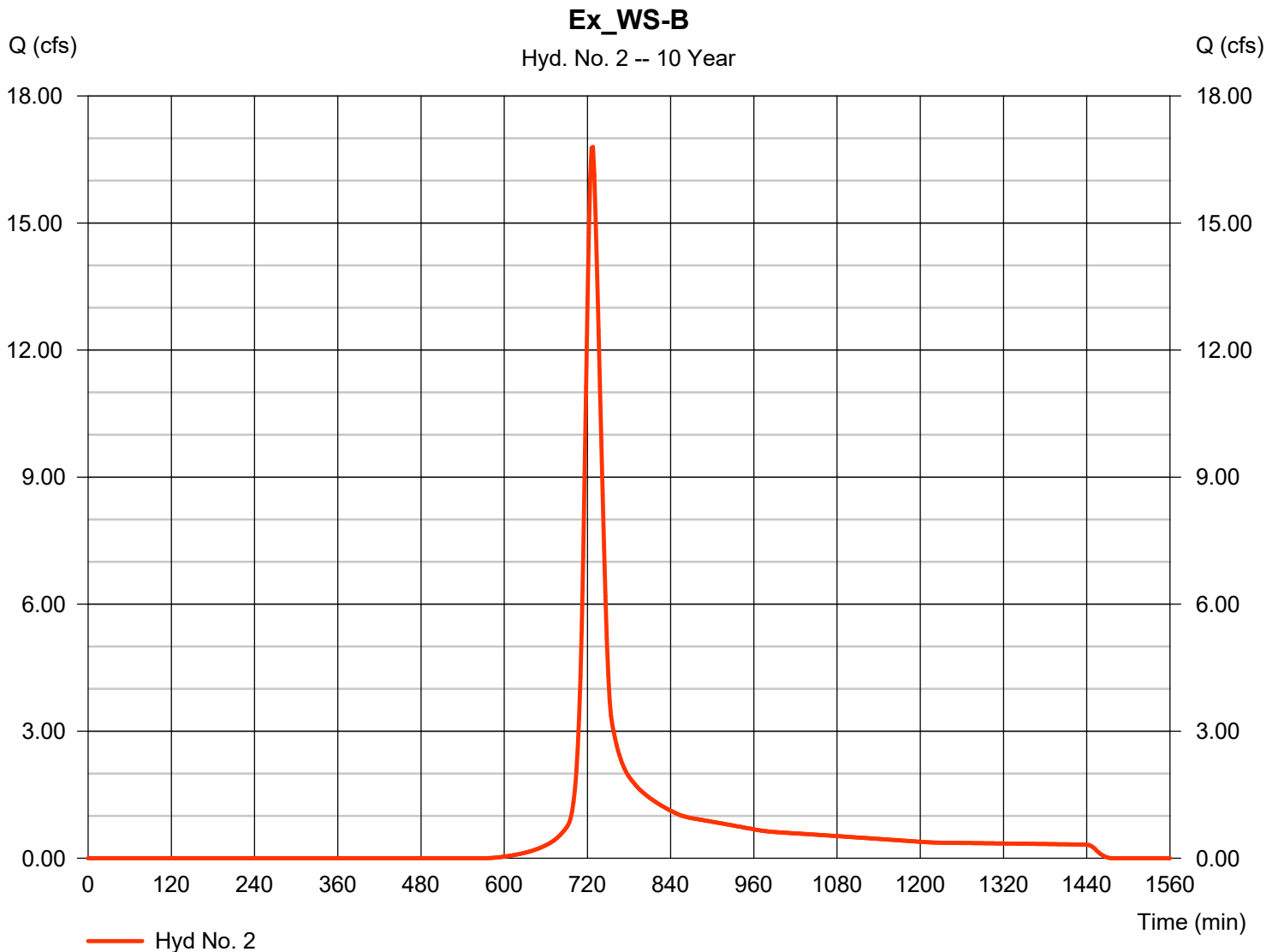
Tuesday, 05 / 25 / 2021

Hyd. No. 2

Ex_WS-B

Hydrograph type	= SCS Runoff	Peak discharge	= 16.79 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 59,018 cuft
Drainage area	= 11.780 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 21.00 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(4.880 \times 98) + (0.110 \times 98) + (1.780 \times 85) + (5.010 \times 61)] / 11.780$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

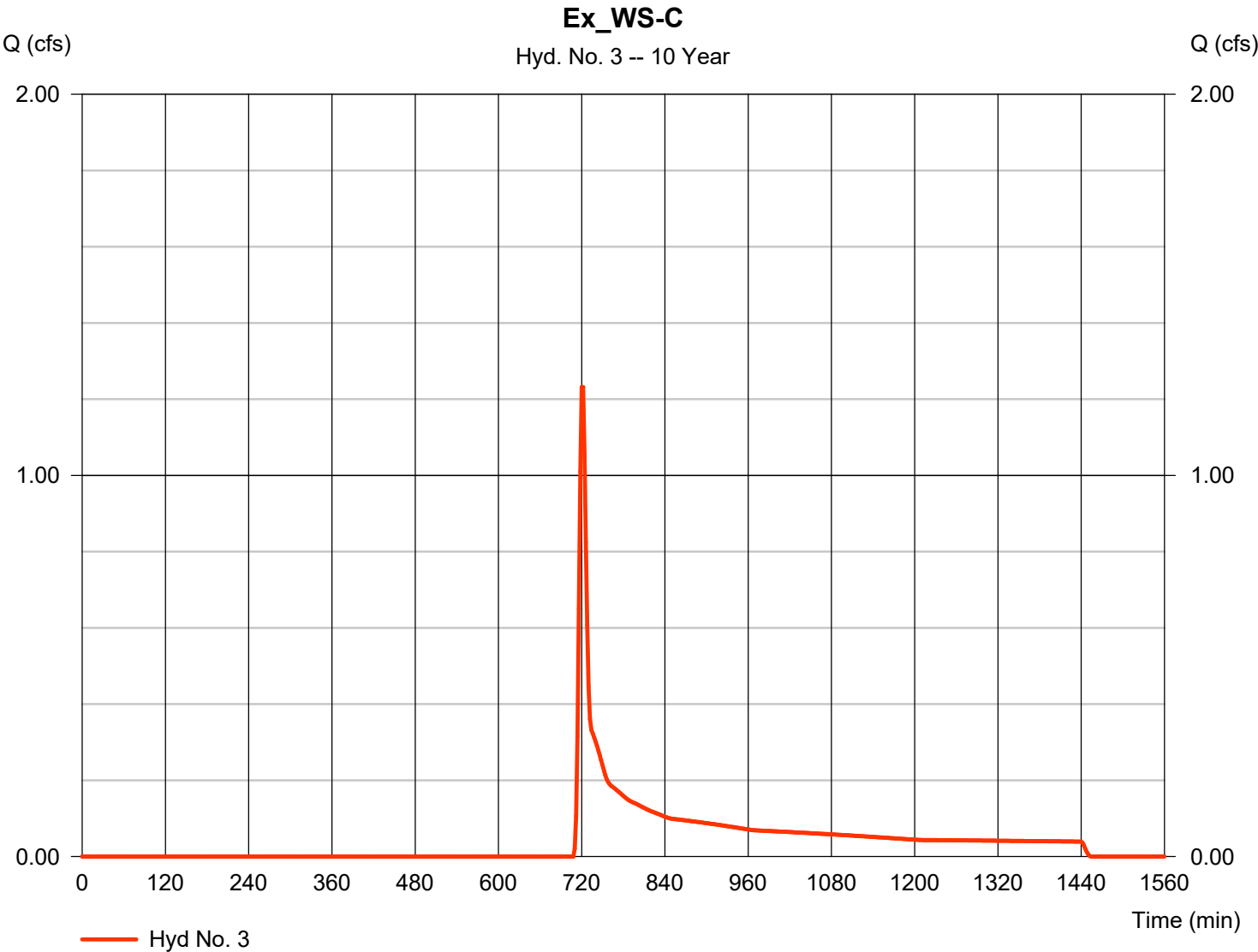
Tuesday, 05 / 25 / 2021

Hyd. No. 3

Ex_WS-C

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.232 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	4,110 cuft
Drainage area	=	2.940 ac	Curve number	=	60*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	8.70 min
Total precip.	=	3.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 98) + (0.730 x 55) + (2.200 x 61)] / 2.940



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

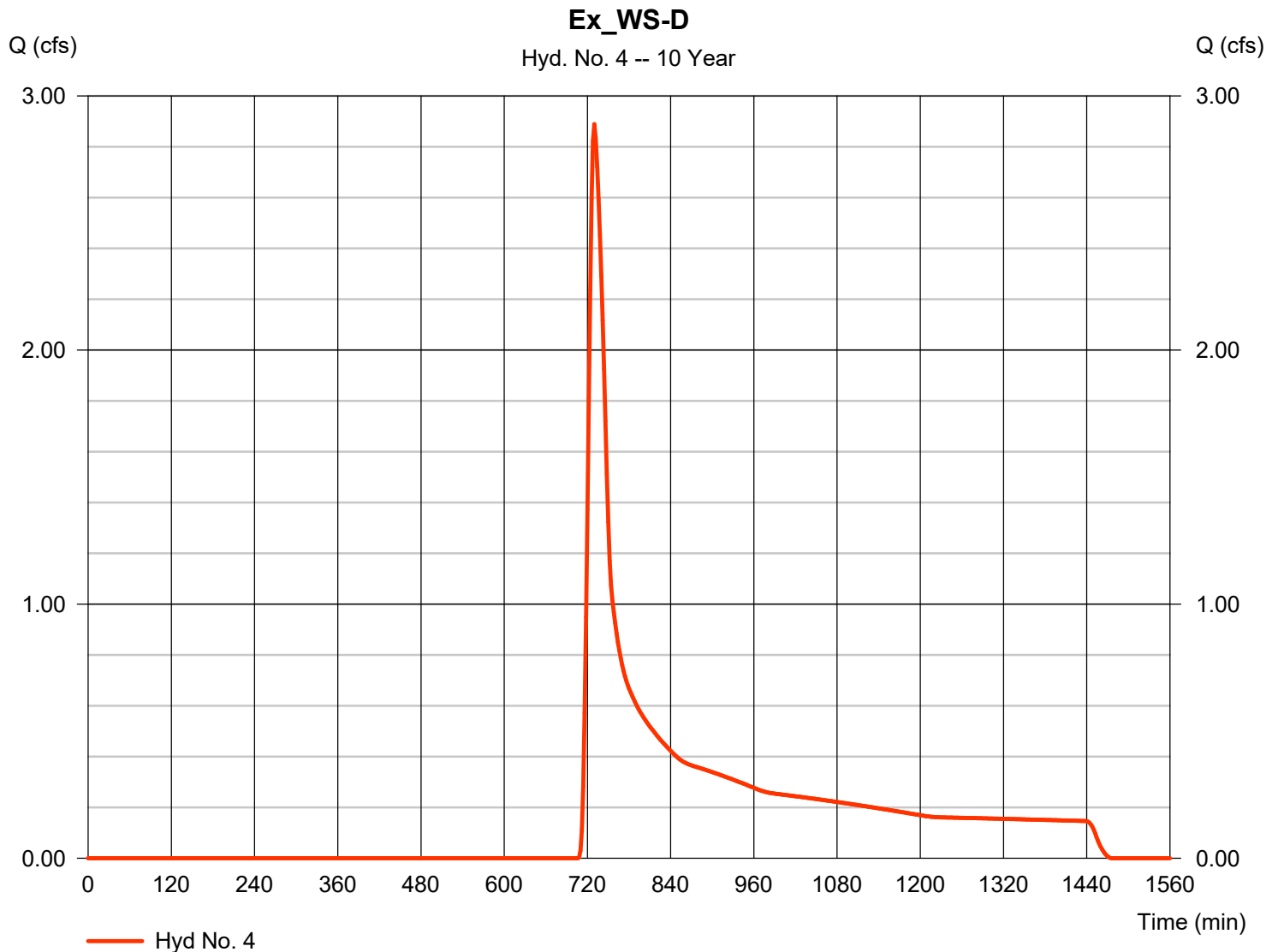
Tuesday, 05 / 25 / 2021

Hyd. No. 4

Ex_WS-D

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.889 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	15,845 cuft
Drainage area	=	10.220 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	22.20 min
Total precip.	=	3.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = $[(0.250 \times 55) + (9.970 \times 61)] / 10.220$



Hydrograph Report

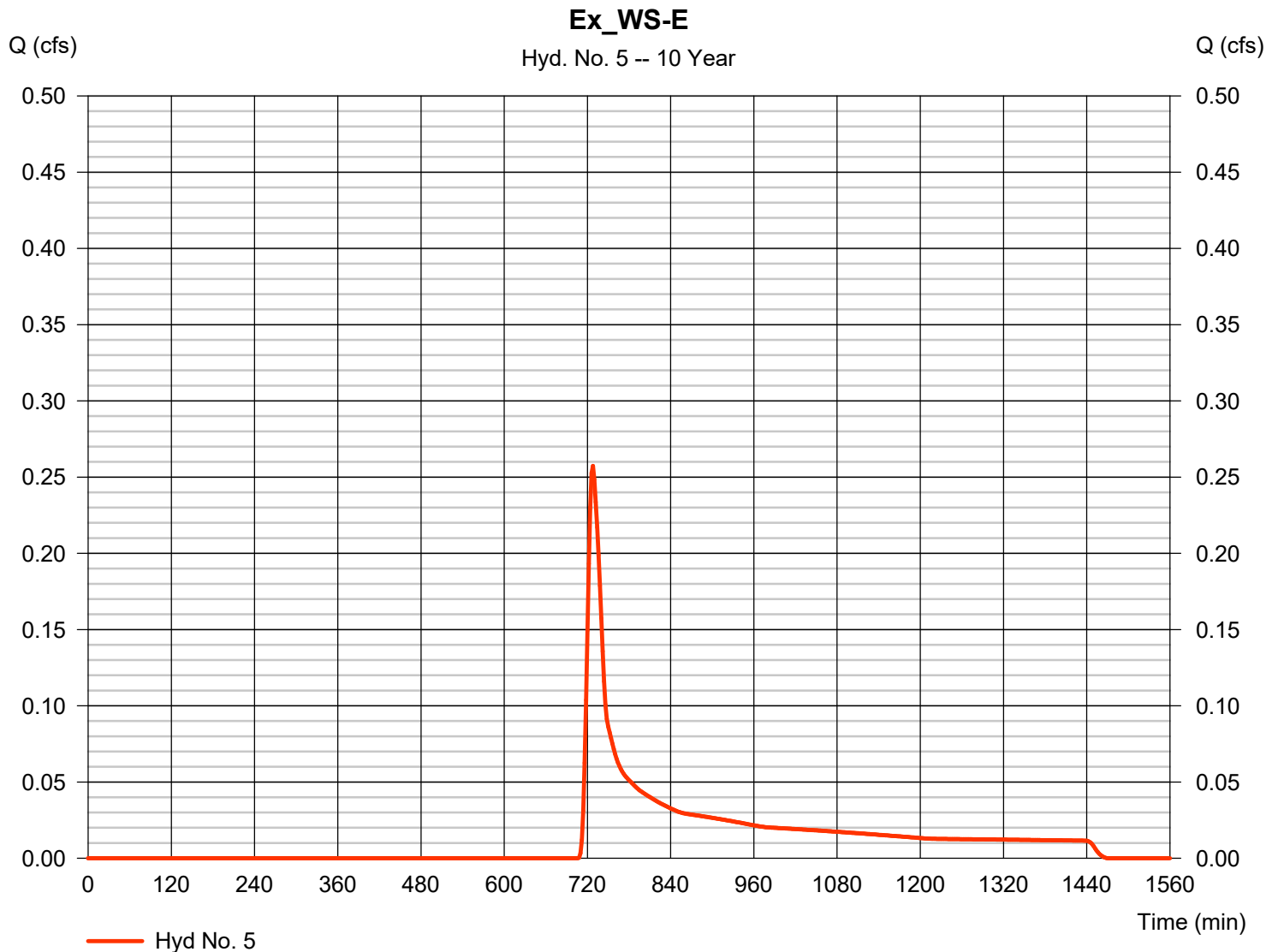
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Tuesday, 05 / 25 / 2021

Hyd. No. 5

Ex_WS-E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.257 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,249 cuft
Drainage area	= 0.820 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.80 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.820 \times 61)] / 0.820$ 

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

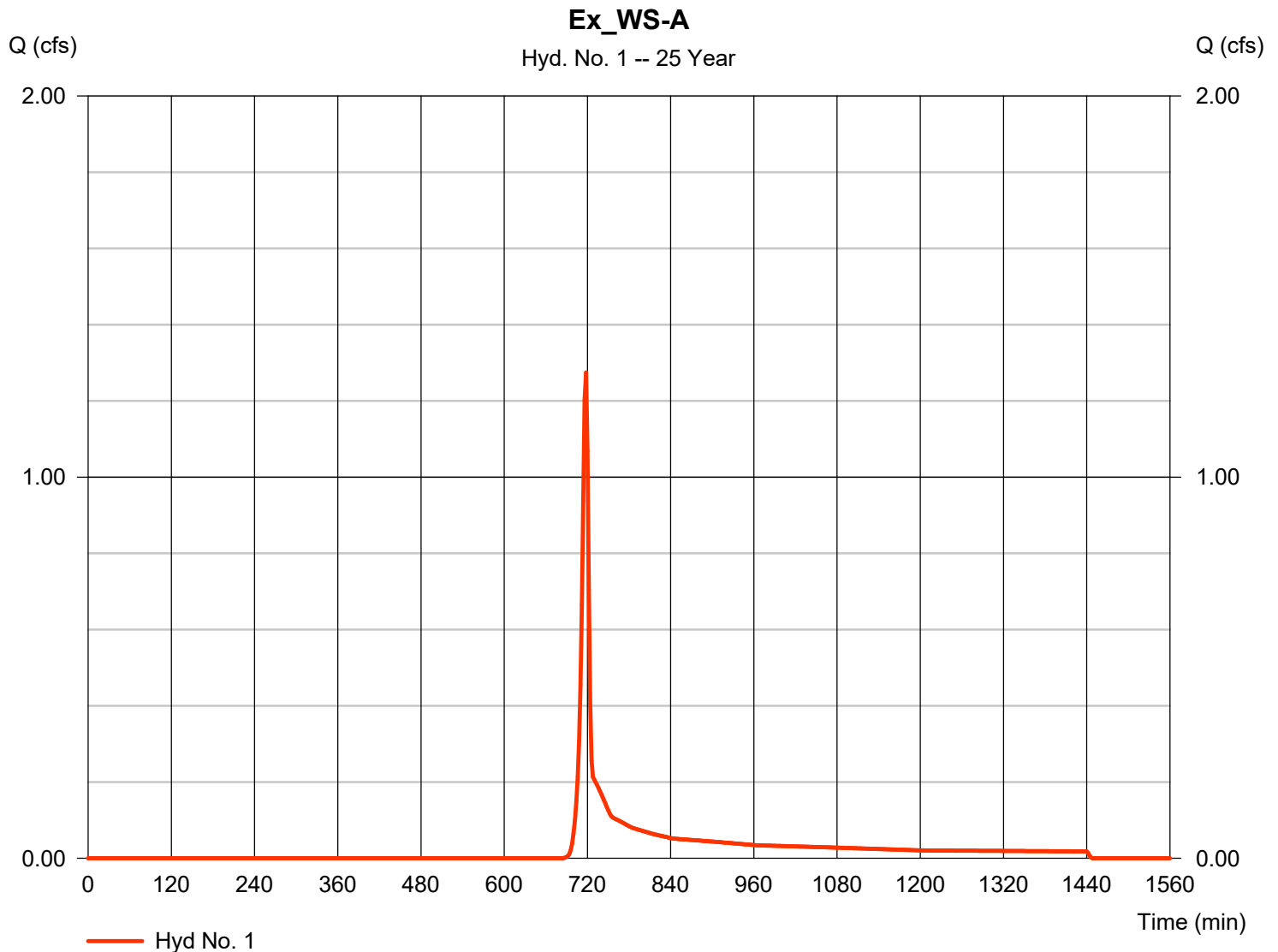
Tuesday, 05 / 25 / 2021

Hyd. No. 1

Ex_WS-A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.275 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,598 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

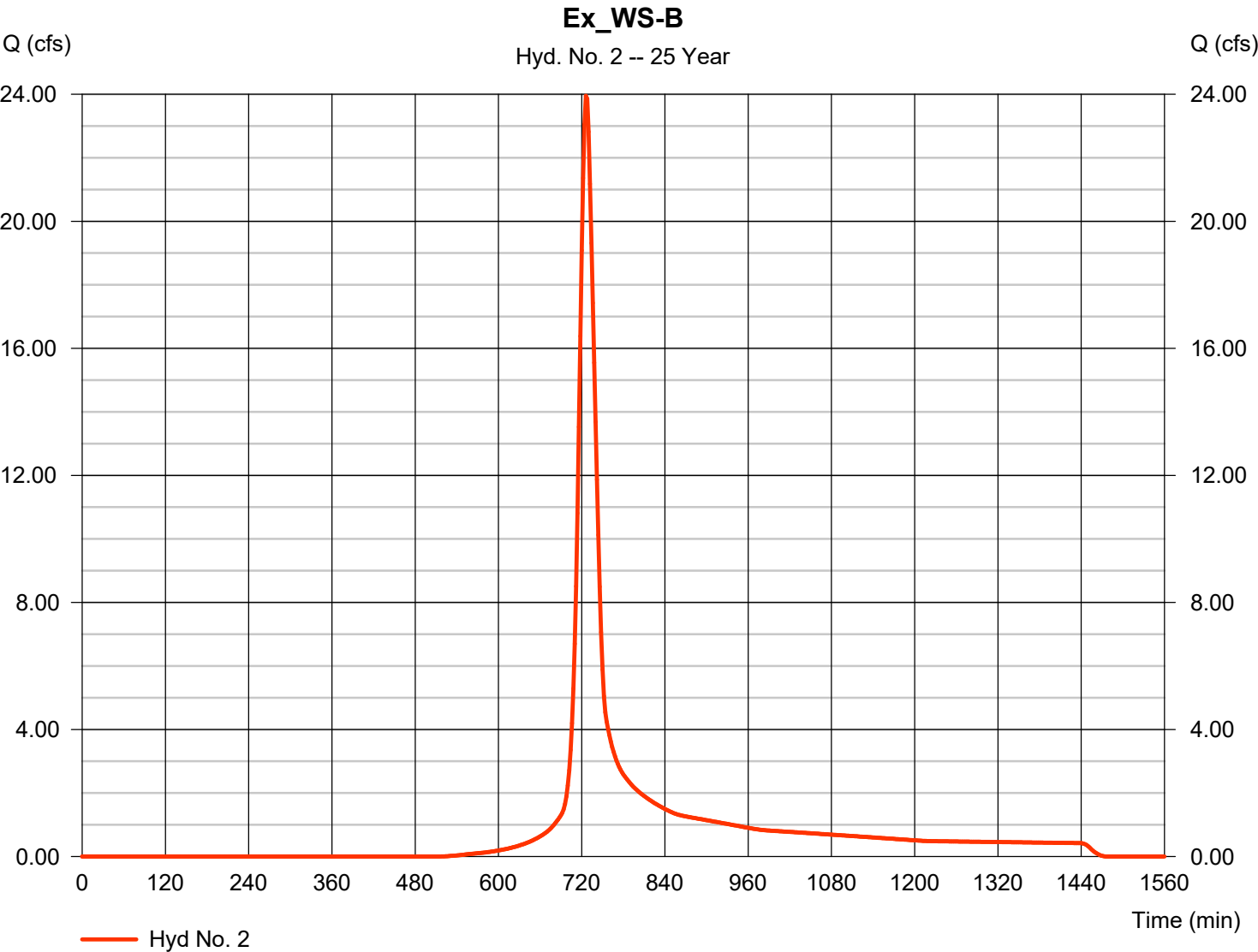
Tuesday, 05 / 25 / 2021

Hyd. No. 2

Ex_WS-B

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.95 cfs
Storm frequency	=	25 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	83,142 cuft
Drainage area	=	11.780 ac	Curve number	=	80*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	21.00 min
Total precip.	=	3.84 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.880 x 98) + (0.110 x 98) + (1.780 x 85) + (5.010 x 61)] / 11.780



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

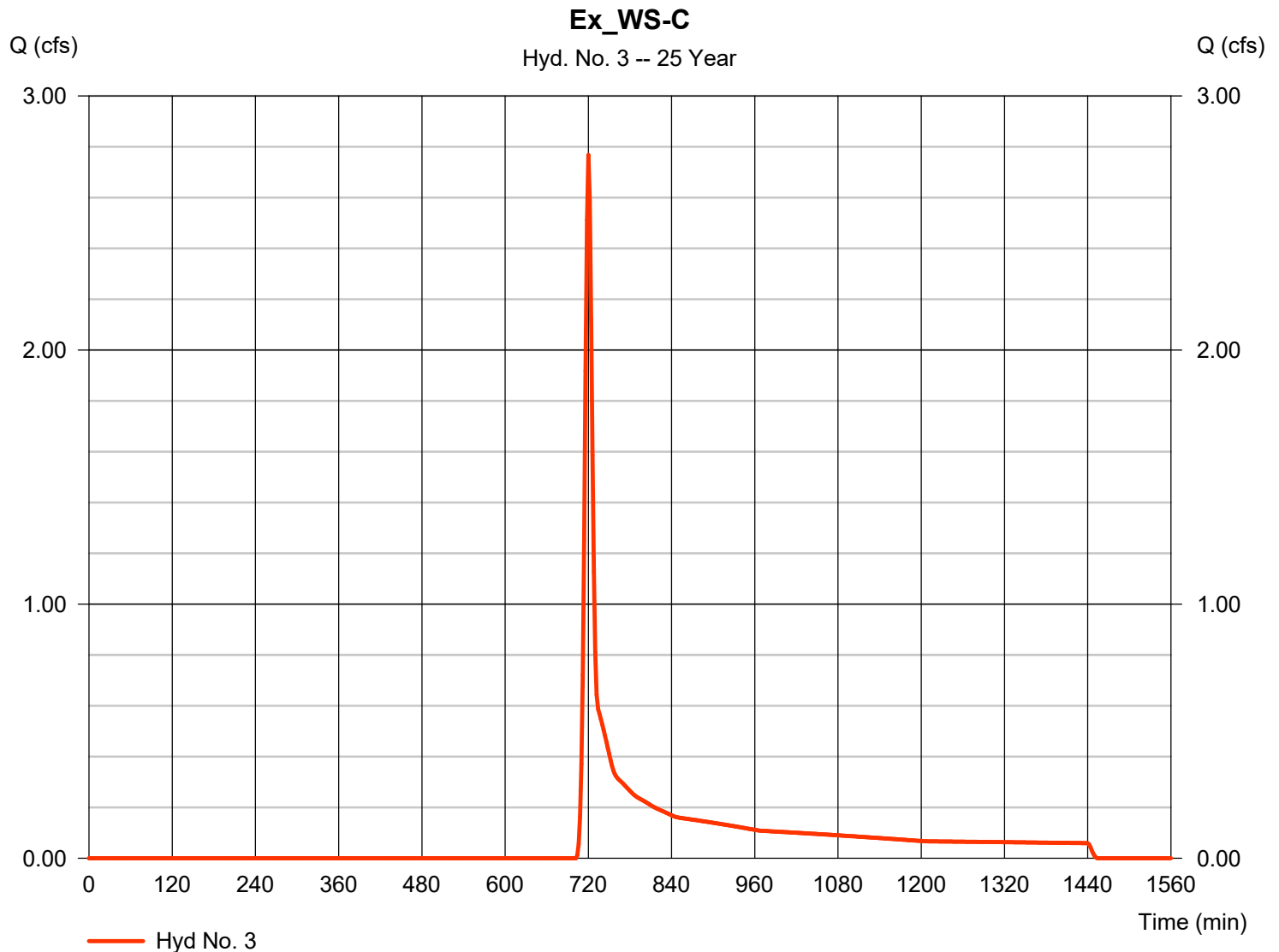
Tuesday, 05 / 25 / 2021

Hyd. No. 3

Ex_WS-C

Hydrograph type	= SCS Runoff	Peak discharge	= 2.768 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 7,309 cuft
Drainage area	= 2.940 ac	Curve number	= 60*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.70 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.730 \times 55) + (2.200 \times 61)] / 2.940$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

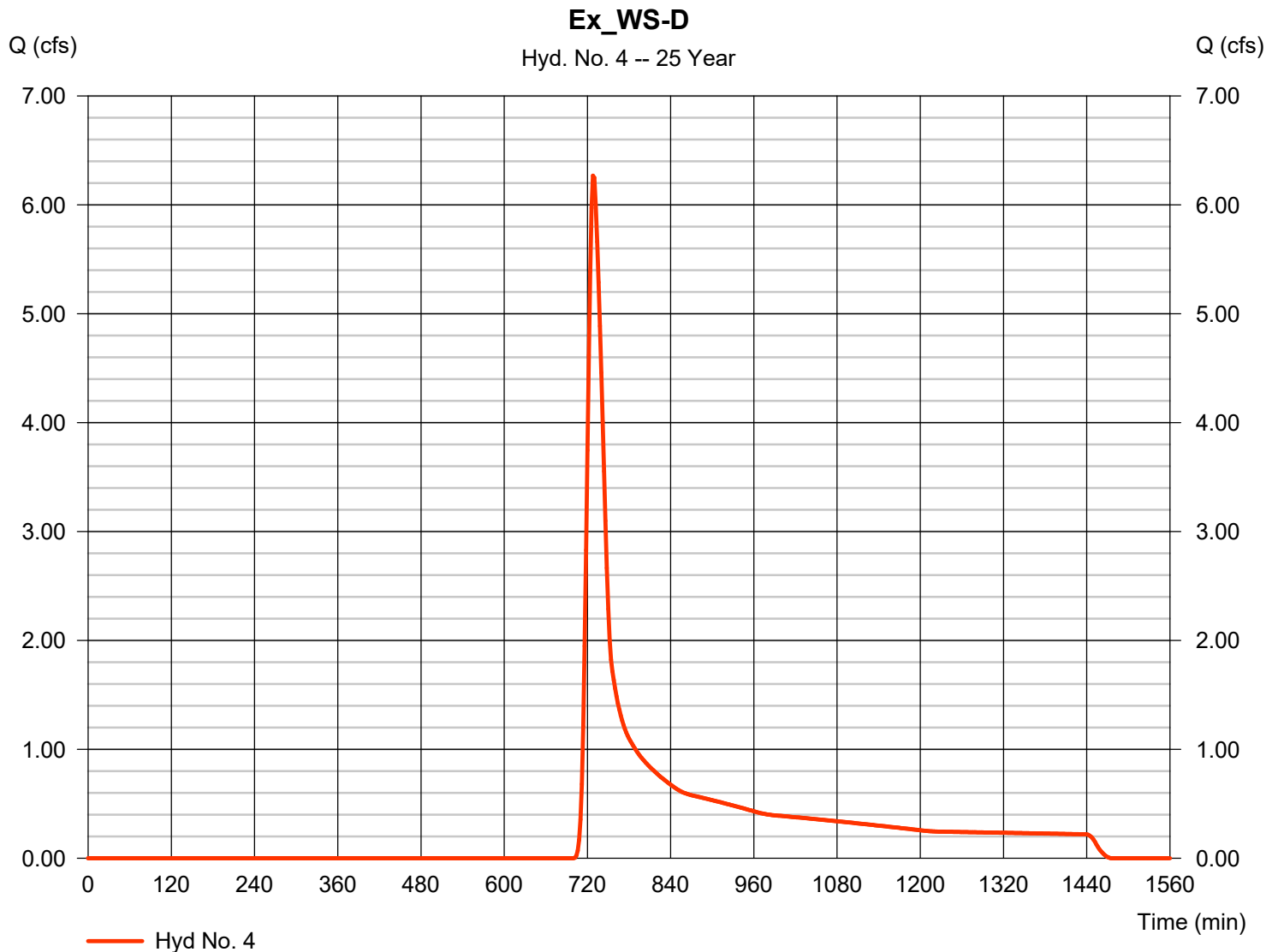
Tuesday, 05 / 25 / 2021

Hyd. No. 4

Ex_WS-D

Hydrograph type	= SCS Runoff	Peak discharge	= 6.268 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 27,663 cuft
Drainage area	= 10.220 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.20 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.250 \times 55) + (9.970 \times 61)] / 10.220$



Hydrograph Report

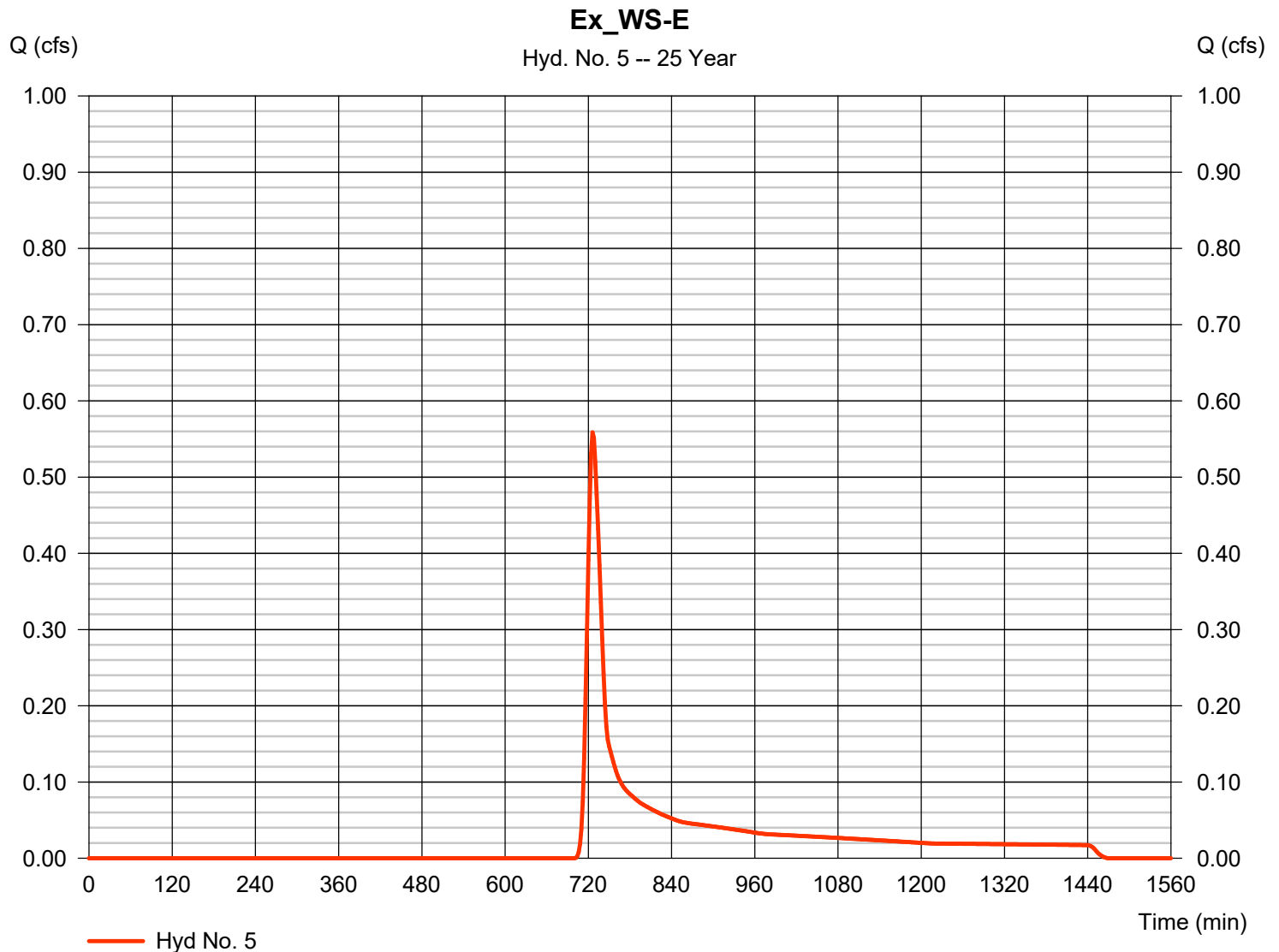
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Hyd. No. 5

Ex_WS-E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.559 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 2,181 cuft
Drainage area	= 0.820 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.80 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.820 \times 61)] / 0.820$ 

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

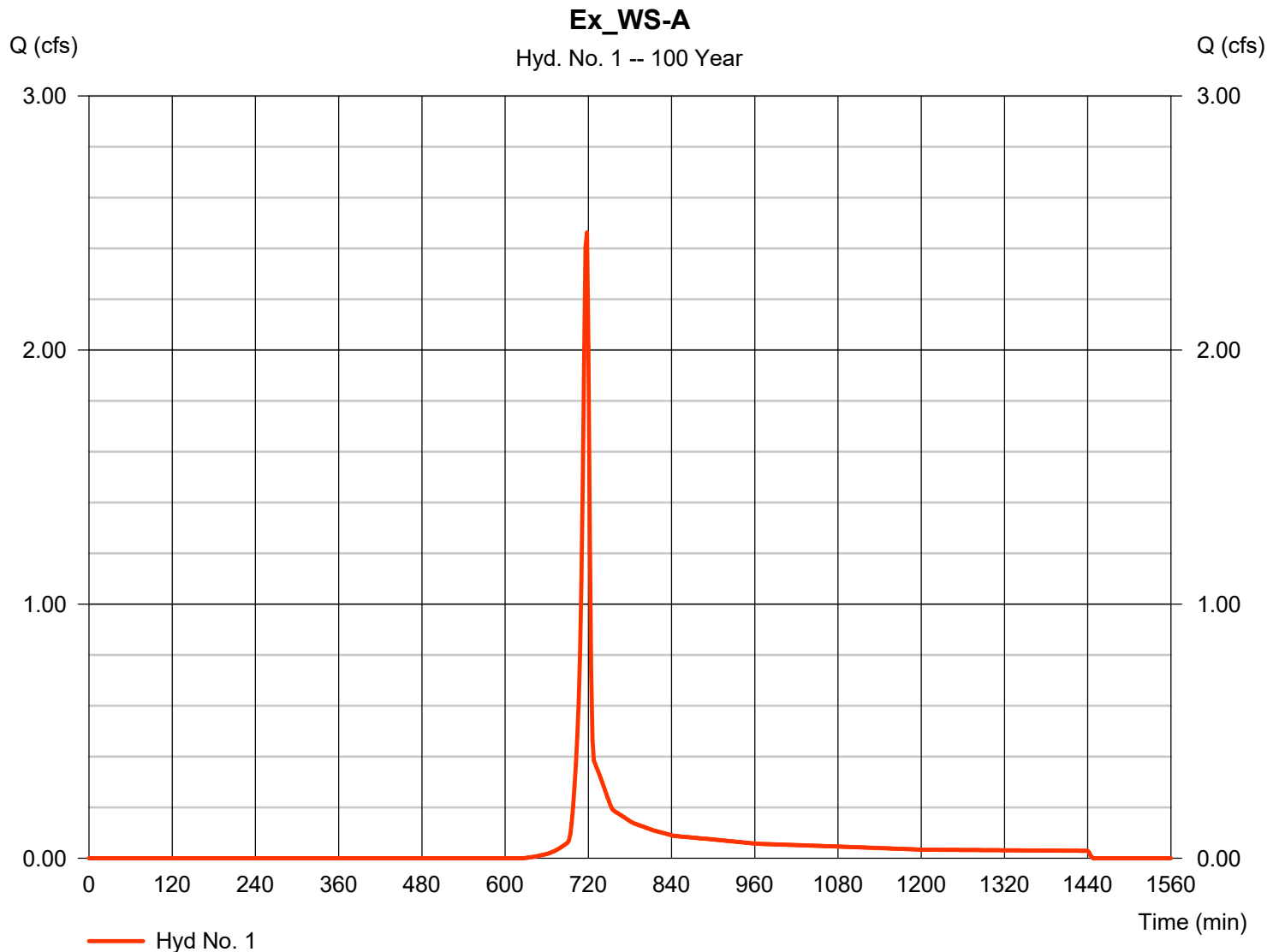
Tuesday, 05 / 25 / 2021

Hyd. No. 1

Ex_WS-A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.462 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 4,924 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Hyd. No. 2

Ex_WS-B

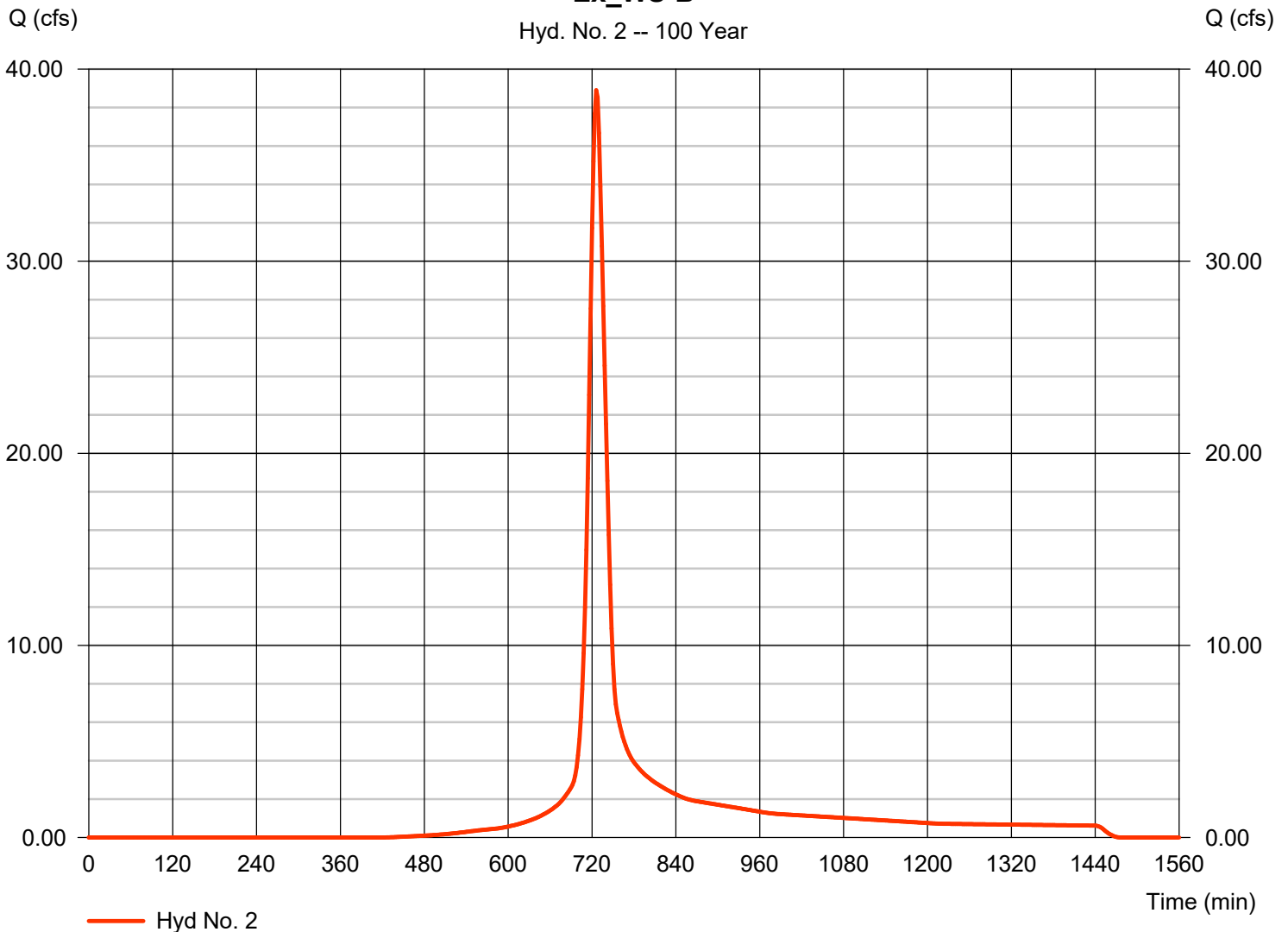
Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 11.780 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.22 in
 Storm duration = 24 hrs

Peak discharge = 38.90 cfs
 Time to peak = 726 min
 Hyd. volume = 134,303 cuft
 Curve number = 80*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(4.880 \times 98) + (0.110 \times 98) + (1.780 \times 85) + (5.010 \times 61)] / 11.780$

Ex_WS-B

Hyd. No. 2 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

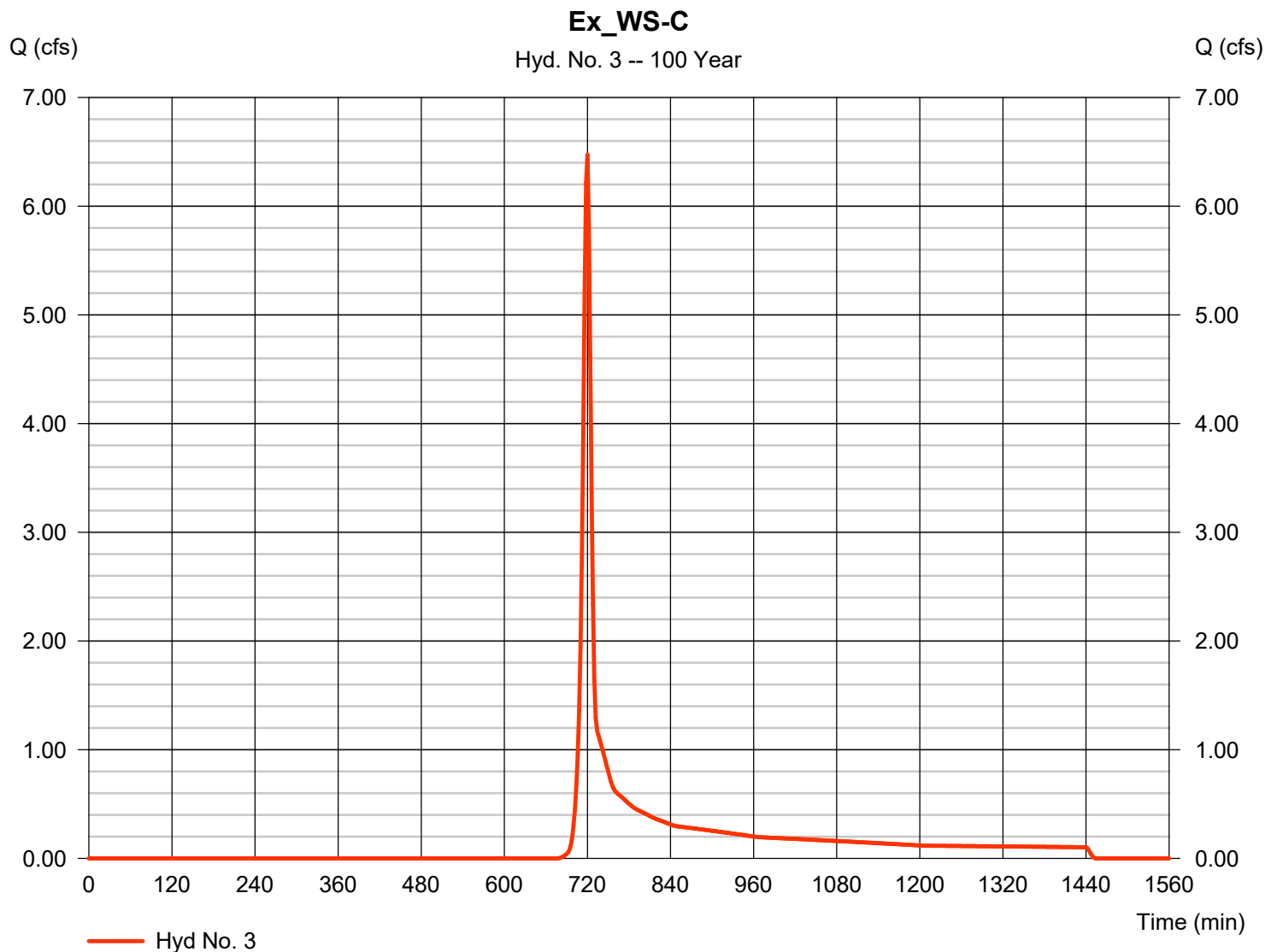
Tuesday, 05 / 25 / 2021

Hyd. No. 3

Ex_WS-C

Hydrograph type	= SCS Runoff	Peak discharge	= 6.473 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 15,276 cuft
Drainage area	= 2.940 ac	Curve number	= 60*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.70 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.730 \times 55) + (2.200 \times 61)] / 2.940$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

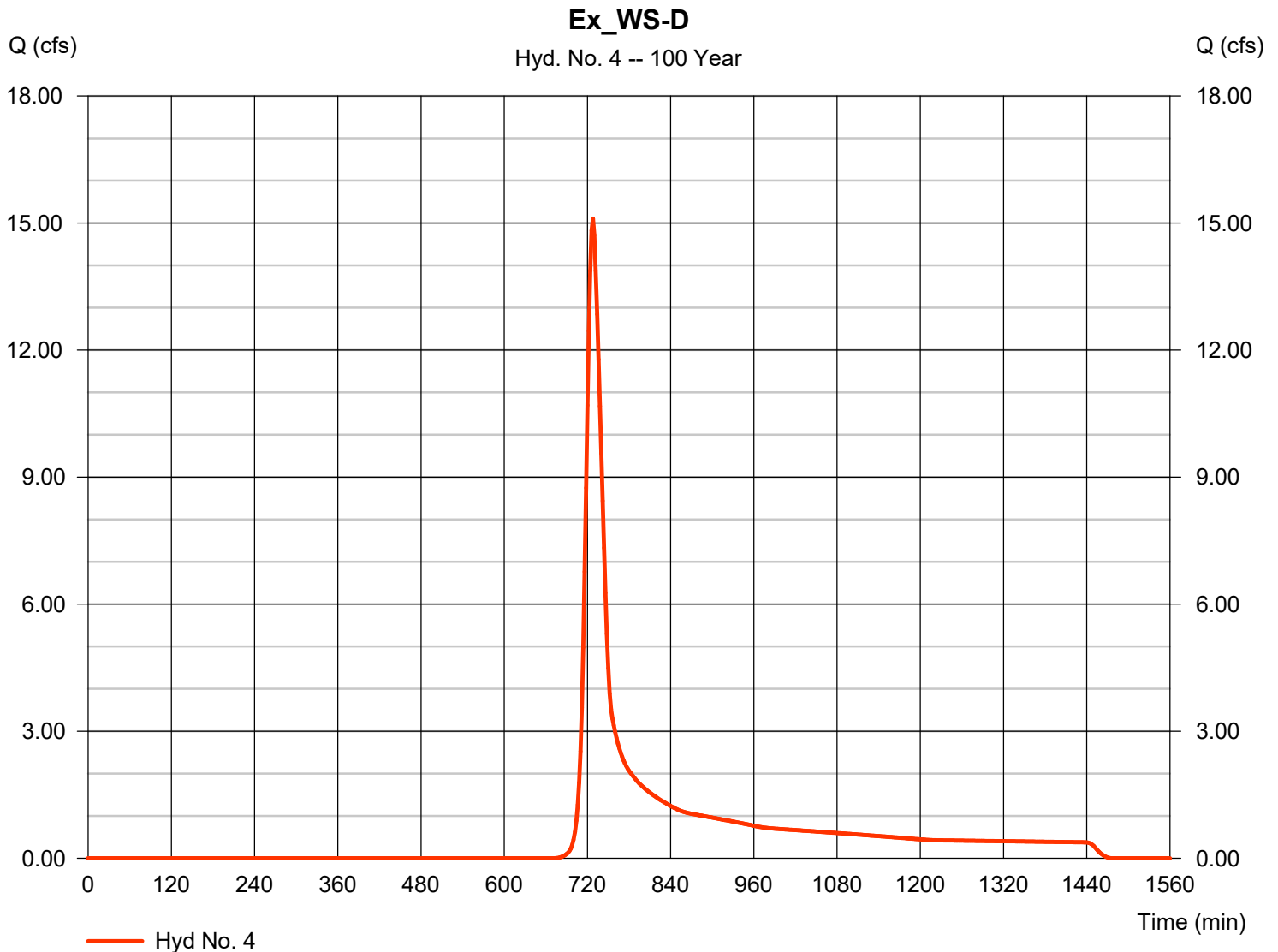
Tuesday, 05 / 25 / 2021

Hyd. No. 4

Ex_WS-D

Hydrograph type	= SCS Runoff	Peak discharge	= 15.10 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 56,758 cuft
Drainage area	= 10.220 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.20 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.250 \times 55) + (9.970 \times 61)] / 10.220$



Hydrograph Report

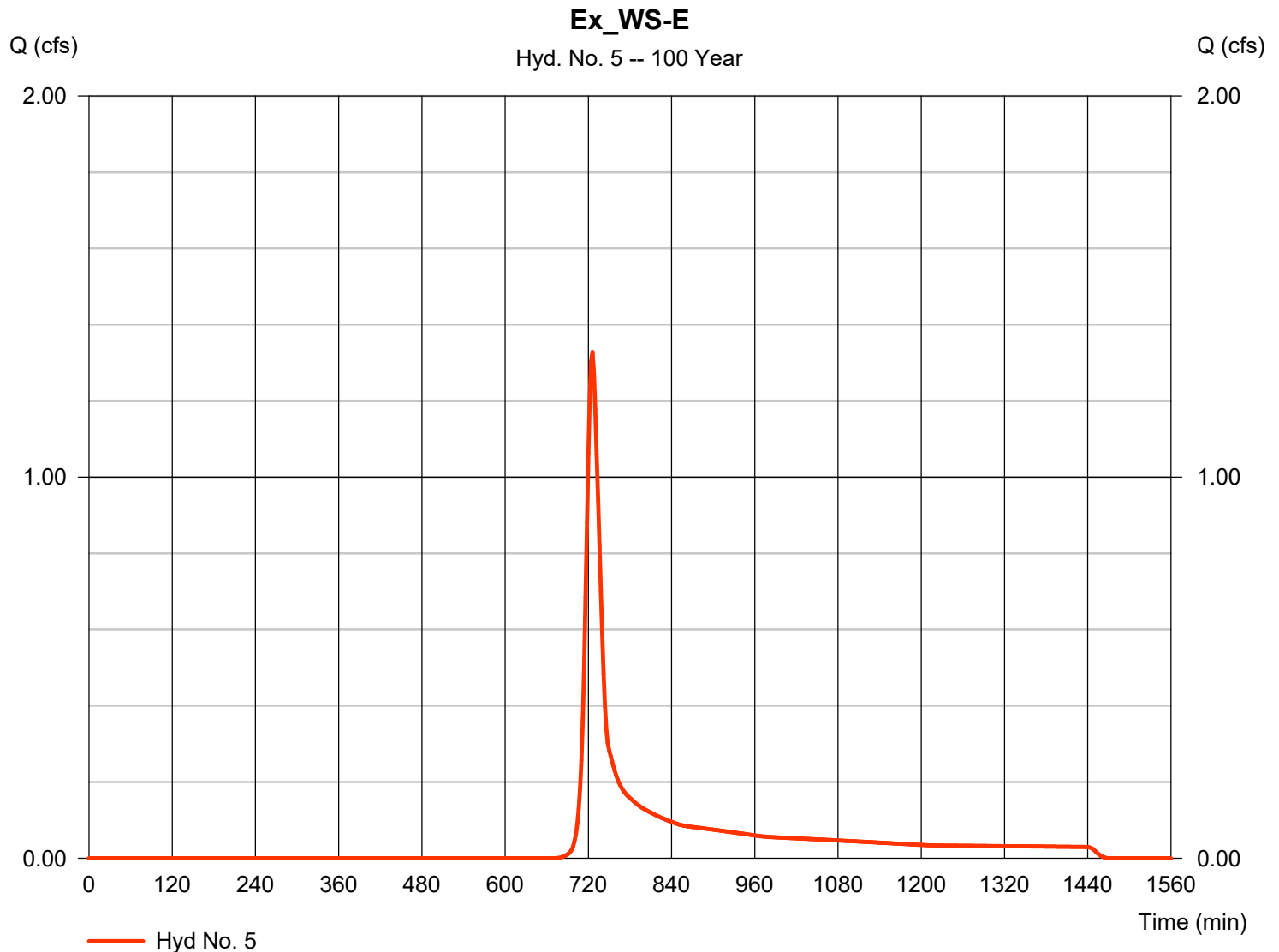
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Hyd. No. 5

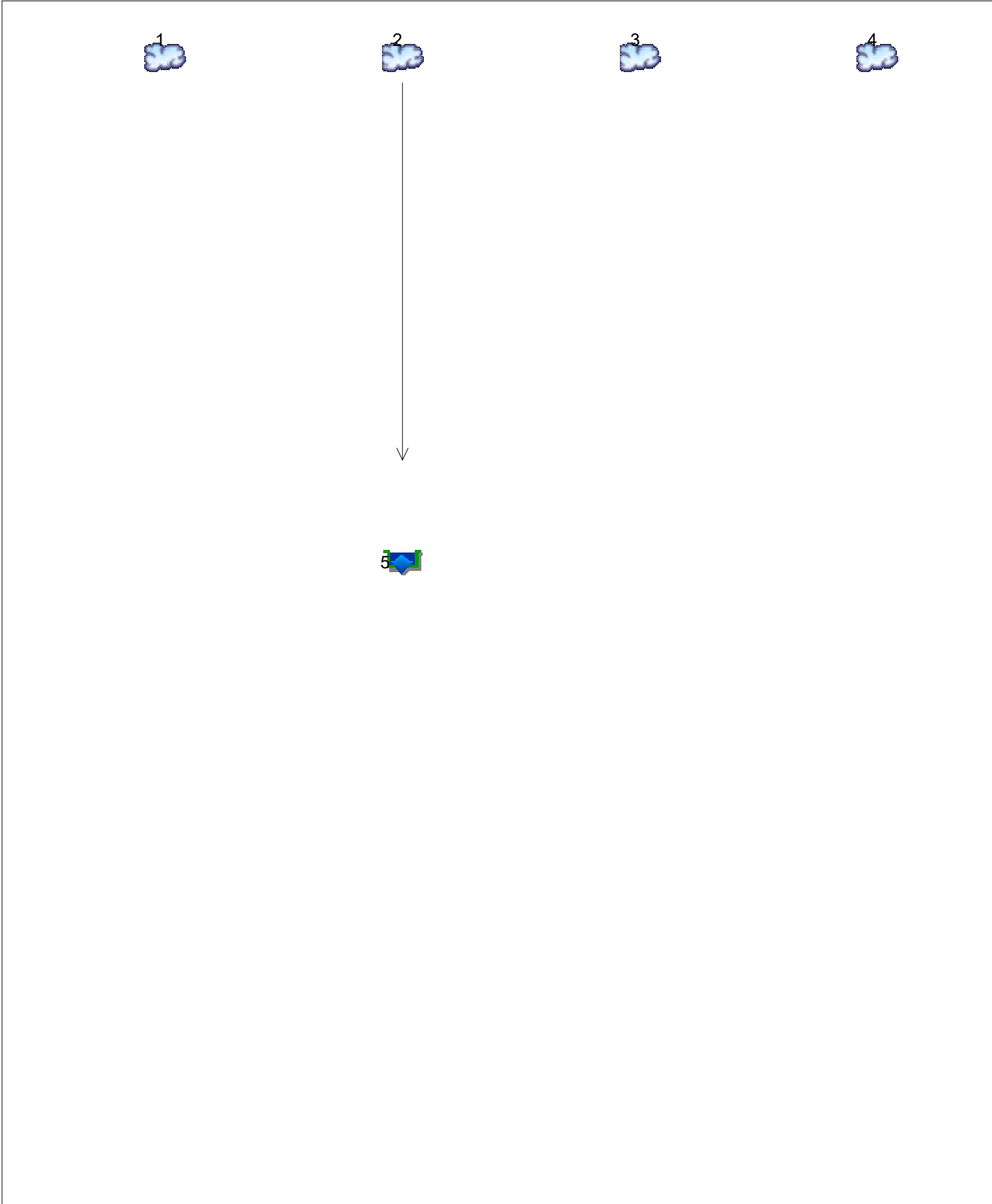
Ex_WS-E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.328 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 4,474 cuft
Drainage area	= 0.820 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.80 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.820 \times 61)] / 0.820$ 

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

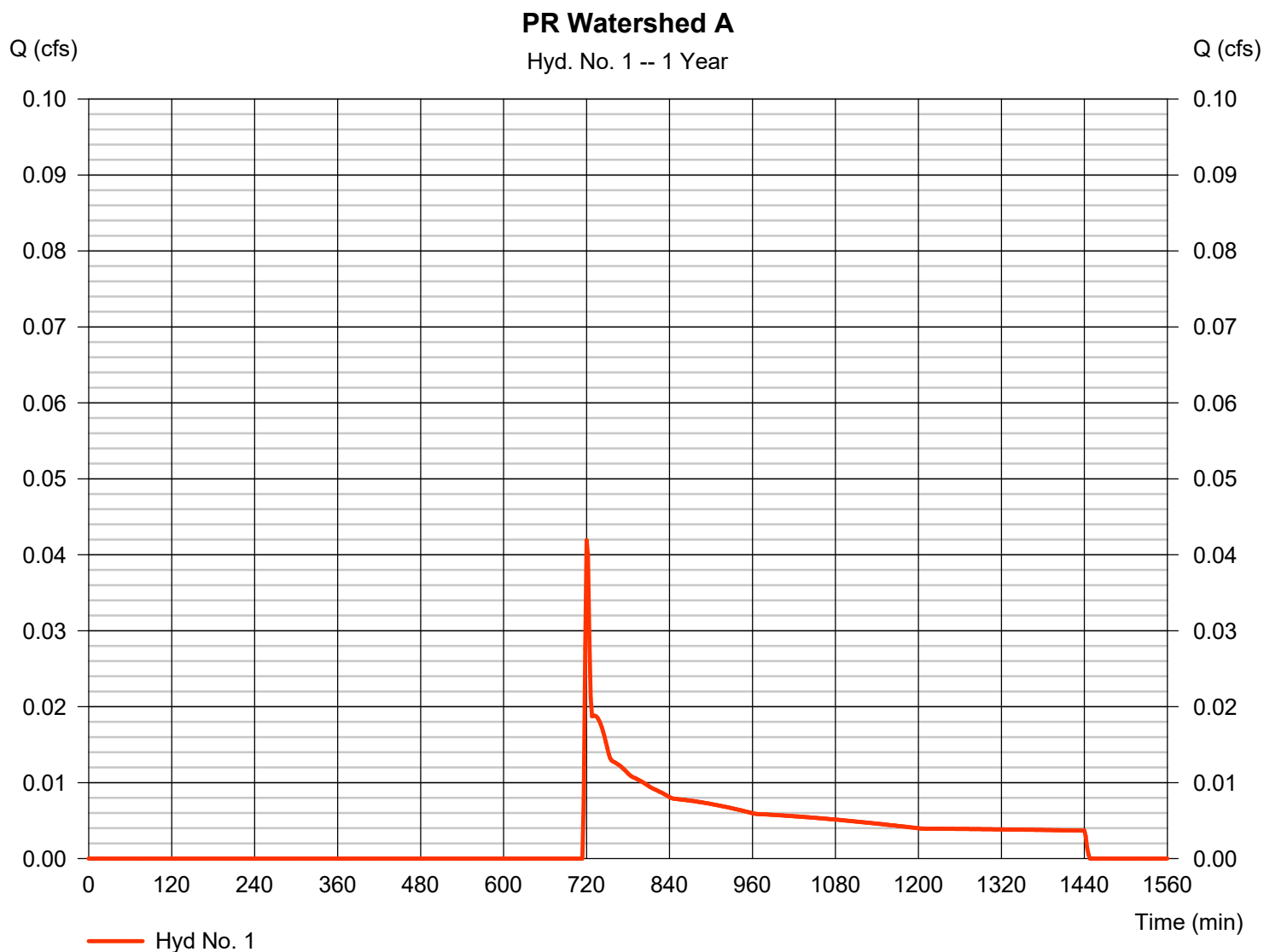
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 282 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



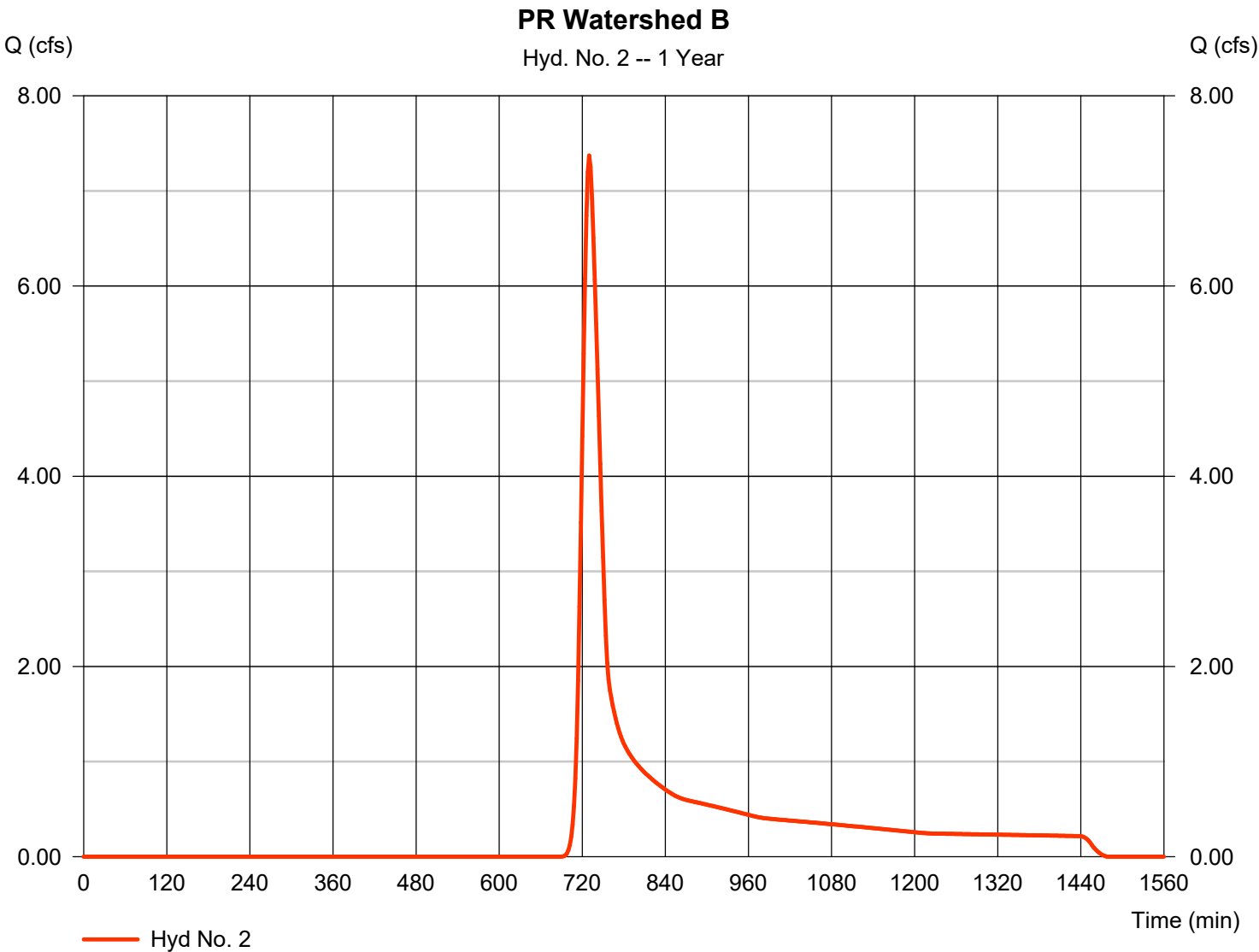
Hydrograph Report

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 7.371 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 30,778 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.900 x 98) + (0.140 x 98) + (5.640 x 85) + (6.970 x 61)] / 18.650



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 2

PR Watershed B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.240	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 1.06	0.00	0.00				
Travel Time (min)	= 22.19	+	0.00	+	0.00	=	22.19
Shallow Concentrated Flow							
Flow length (ft)	= 132.00	83.00	0.00				
Watercourse slope (%)	= 1.51	6.02	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=1.98	3.96	0.00				
Travel Time (min)	= 1.11	+	0.35	+	0.00	=	1.46
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				23.60 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

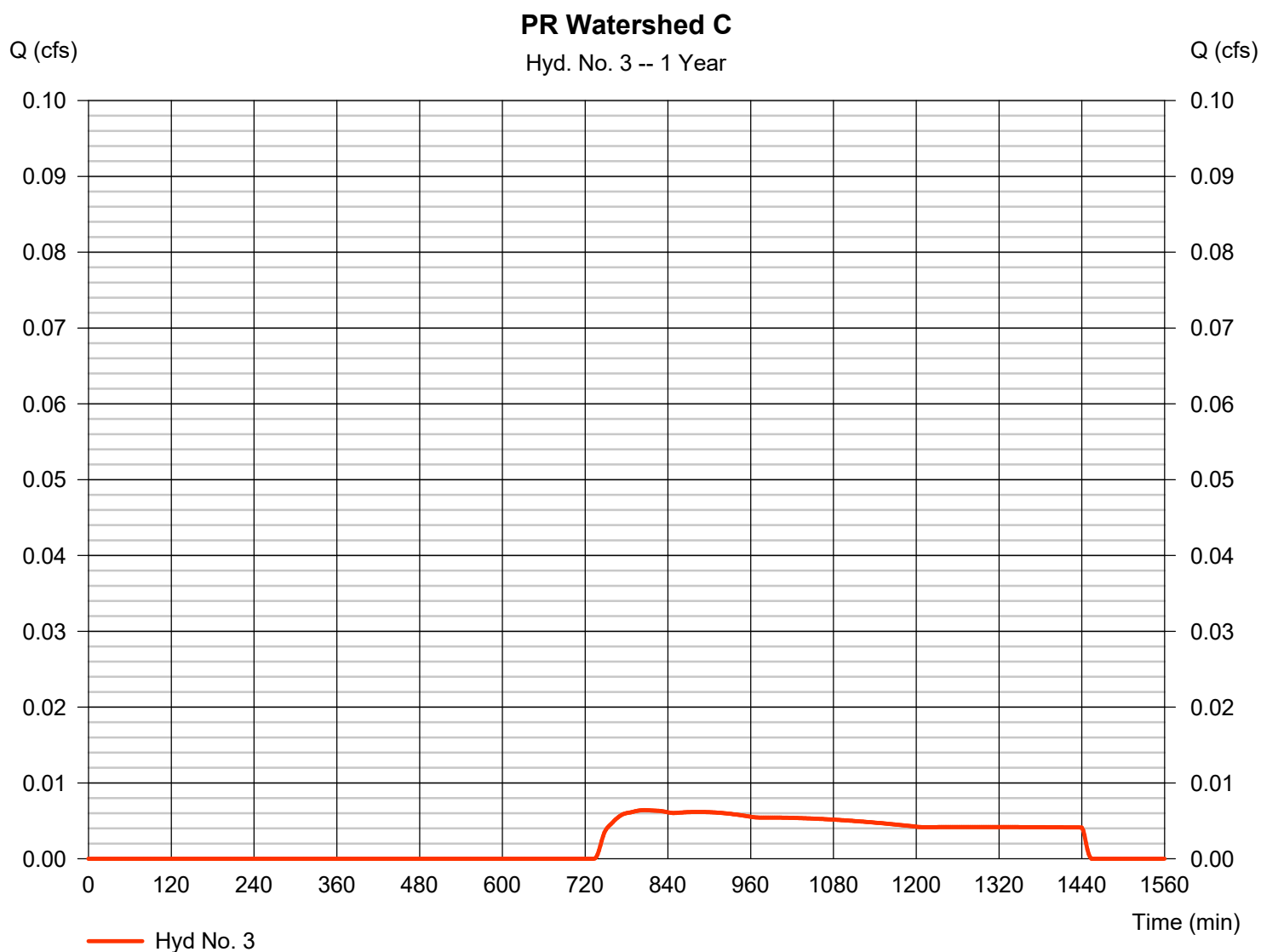
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.006 cfs
Storm frequency	= 1 yrs	Time to peak	= 806 min
Time interval	= 2 min	Hyd. volume	= 211 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 3

PR Watershed C

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 7.00	0.00	0.00				
Travel Time (min)	= 7.16	+	0.00	+	0.00	=	7.16
Shallow Concentrated Flow							
Flow length (ft)	= 190.00	0.00	0.00				
Watercourse slope (%)	= 2.10	0.00	0.00				
Surface description	= Unpaved	Paved	Paved				
Average velocity (ft/s)	=2.34	0.00	0.00				
Travel Time (min)	= 1.35	+	0.00	+	0.00	=	1.35
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	((0})0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				8.50 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

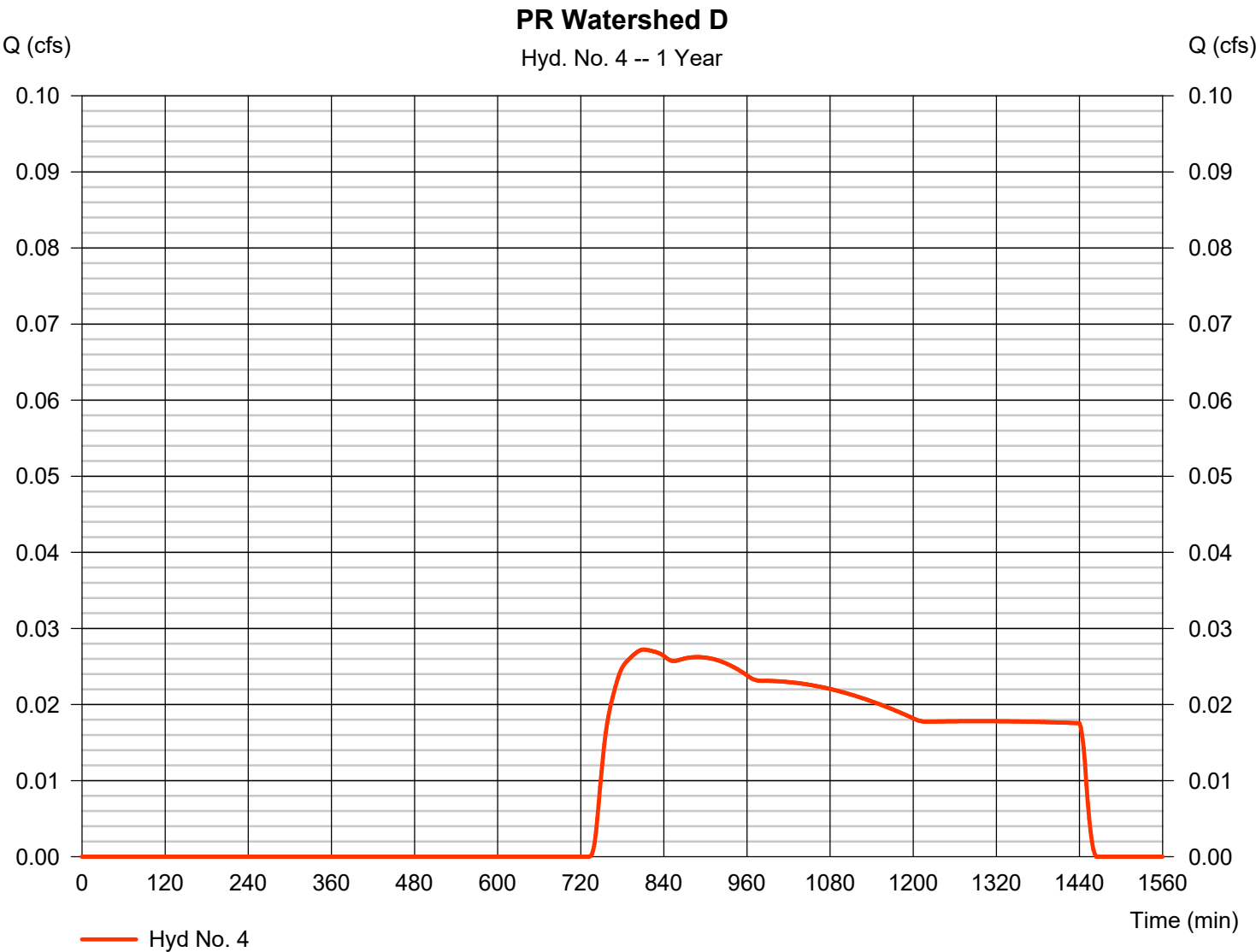
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.027 cfs
Storm frequency	=	1 yrs	Time to peak	=	812 min
Time interval	=	2 min	Hyd. volume	=	898 cuft
Drainage area	=	5.800 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.70 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 98) + (0.250 x 55) + (5.450 x 61)] / 5.800



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 4

PR Watershed D

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 1.67	0.00	0.00				
Travel Time (min)	= 12.70	+	0.00	+	0.00	=	12.70
Shallow Concentrated Flow							
Flow length (ft)	= 206.00	119.00	0.00				
Watercourse slope (%)	= 1.61	0.84	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.05	1.48	0.00				
Travel Time (min)	= 1.68	+	1.34	+	0.00	=	3.02
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				15.70 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

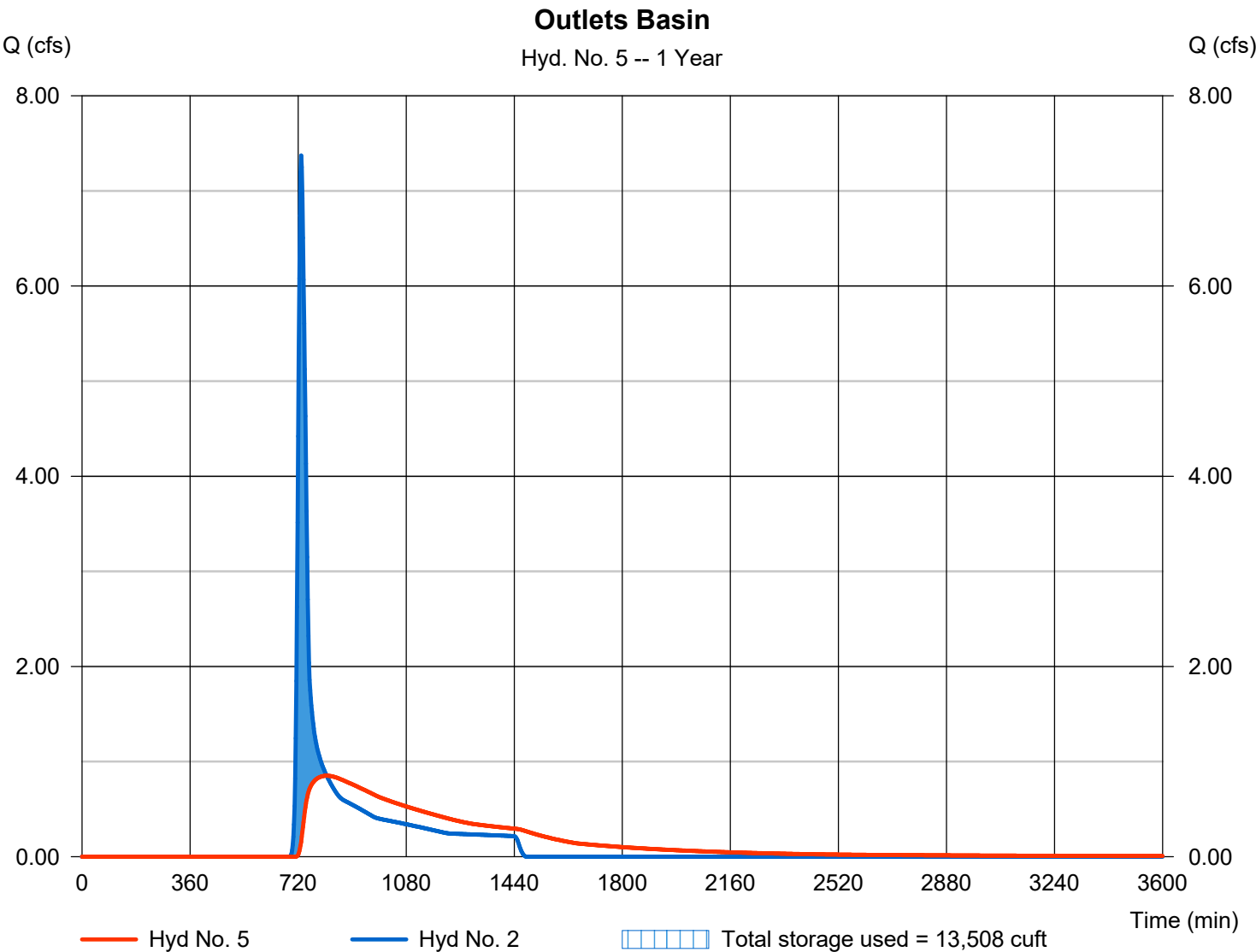
Tuesday, 05 / 25 / 2021

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.851 cfs
Storm frequency	= 1 yrs	Time to peak	= 816 min
Time interval	= 2 min	Hyd. volume	= 30,263 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 593.36 ft
Reservoir name	= Pond Update	Max. Storage	= 13,508 cuft

Storage Indication method used.



Pond Report

11

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Pond No. 1 - Pond Update

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 592.93 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	592.93	24,621	0	0
0.07	593.00	29,227	1,885	1,885
1.07	594.00	34,991	32,109	33,994
2.07	595.00	39,515	37,253	71,247
3.07	596.00	45,603	42,559	113,806
4.07	597.00	54,445	50,024	163,830
4.74	597.67	98,238	51,148	214,977

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 592.93	0.00	0.00	0.00
Length (ft)	= 220.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	15.00	0.00
Crest El. (ft)	= 0.00	0.00	597.17	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	CipIti	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	592.93	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.01	188	592.94	0.00 ic	---	---	---	---	---	0.00	---	---	---	0.000
0.01	377	592.94	0.00 ic	---	---	---	---	---	0.00	---	---	---	0.001
0.02	565	592.95	0.00 ic	---	---	---	---	---	0.00	---	---	---	0.002
0.03	754	592.96	0.00 ic	---	---	---	---	---	0.00	---	---	---	0.004
0.04	942	592.97	0.01 ic	---	---	---	---	---	0.00	---	---	---	0.006
0.04	1,131	592.97	0.01 ic	---	---	---	---	---	0.00	---	---	---	0.009
0.05	1,319	592.98	0.01 ic	---	---	---	---	---	0.00	---	---	---	0.012
0.06	1,508	592.99	0.02 ic	---	---	---	---	---	0.00	---	---	---	0.016
0.06	1,696	592.99	0.02 ic	---	---	---	---	---	0.00	---	---	---	0.020
0.07	1,885	593.00	0.02 ic	---	---	---	---	---	0.00	---	---	---	0.025
0.17	5,096	593.10	0.14 ic	---	---	---	---	---	0.00	---	---	---	0.141
0.27	8,307	593.20	0.35 ic	---	---	---	---	---	0.00	---	---	---	0.346
0.37	11,518	593.30	0.63 ic	---	---	---	---	---	0.00	---	---	---	0.631
0.47	14,728	593.40	0.99 ic	---	---	---	---	---	0.00	---	---	---	0.986
0.57	17,939	593.50	1.40 ic	---	---	---	---	---	0.00	---	---	---	1.401
0.67	21,150	593.60	1.87 ic	---	---	---	---	---	0.00	---	---	---	1.867
0.77	24,361	593.70	2.37 ic	---	---	---	---	---	0.00	---	---	---	2.369
0.87	27,572	593.80	2.90 ic	---	---	---	---	---	0.00	---	---	---	2.897
0.97	30,783	593.90	3.43 ic	---	---	---	---	---	0.00	---	---	---	3.428
1.07	33,994	594.00	3.94 ic	---	---	---	---	---	0.00	---	---	---	3.940
1.17	37,719	594.10	4.40 ic	---	---	---	---	---	0.00	---	---	---	4.398
1.27	41,444	594.20	4.74 ic	---	---	---	---	---	0.00	---	---	---	4.745
1.37	45,170	594.30	5.10 ic	---	---	---	---	---	0.00	---	---	---	5.099
1.47	48,895	594.40	5.43 ic	---	---	---	---	---	0.00	---	---	---	5.431
1.57	52,620	594.50	5.74 ic	---	---	---	---	---	0.00	---	---	---	5.743
1.67	56,346	594.60	6.04 ic	---	---	---	---	---	0.00	---	---	---	6.039
1.77	60,071	594.70	6.32 ic	---	---	---	---	---	0.00	---	---	---	6.322
1.87	63,796	594.80	6.45 oc	---	---	---	---	---	0.00	---	---	---	6.453
1.97	67,522	594.90	6.57 oc	---	---	---	---	---	0.00	---	---	---	6.567
2.07	71,247	595.00	6.68 oc	---	---	---	---	---	0.00	---	---	---	6.678
2.17	75,503	595.10	6.79 oc	---	---	---	---	---	0.00	---	---	---	6.788
2.27	79,759	595.20	6.90 oc	---	---	---	---	---	0.00	---	---	---	6.896
2.37	84,015	595.30	7.00 oc	---	---	---	---	---	0.00	---	---	---	7.002
2.47	88,270	595.40	7.11 oc	---	---	---	---	---	0.00	---	---	---	7.107
2.57	92,526	595.50	7.21 oc	---	---	---	---	---	0.00	---	---	---	7.210

Continues on next page...

Pond Update

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.67	96,782	595.60	7.31 oc	---	---	---	---	---	0.00	---	---	---	7.312
2.77	101,038	595.70	7.41 oc	---	---	---	---	---	0.00	---	---	---	7.412
2.87	105,294	595.80	7.51 oc	---	---	---	---	---	0.00	---	---	---	7.511
2.97	109,550	595.90	7.61 oc	---	---	---	---	---	0.00	---	---	---	7.608
3.07	113,806	596.00	7.71 oc	---	---	---	---	---	0.00	---	---	---	7.705
3.17	118,808	596.10	7.80 oc	---	---	---	---	---	0.00	---	---	---	7.800
3.27	123,811	596.20	7.89 oc	---	---	---	---	---	0.00	---	---	---	7.894
3.37	128,813	596.30	7.99 oc	---	---	---	---	---	0.00	---	---	---	7.987
3.47	133,815	596.40	8.08 oc	---	---	---	---	---	0.00	---	---	---	8.079
3.57	138,818	596.50	8.17 oc	---	---	---	---	---	0.00	---	---	---	8.170
3.67	143,820	596.60	8.26 oc	---	---	---	---	---	0.00	---	---	---	8.260
3.77	148,823	596.70	8.35 oc	---	---	---	---	---	0.00	---	---	---	8.349
3.87	153,825	596.80	8.44 oc	---	---	---	---	---	0.00	---	---	---	8.437
3.97	158,828	596.90	8.52 oc	---	---	---	---	---	0.00	---	---	---	8.524
4.07	163,830	597.00	8.61 oc	---	---	---	---	---	0.00	---	---	---	8.610
4.14	168,945	597.07	8.67 oc	---	---	---	---	---	0.00	---	---	---	8.668
4.20	174,059	597.13	8.72 oc	---	---	---	---	---	0.00	---	---	---	8.724
4.27	179,174	597.20	8.78 oc	---	---	---	---	---	0.27	---	---	---	9.054
4.34	184,289	597.27	8.84 oc	---	---	---	---	---	1.53	---	---	---	10.37
4.40	189,404	597.34	8.89 oc	---	---	---	---	---	3.35	---	---	---	12.24
4.47	194,518	597.40	8.95 oc	---	---	---	---	---	5.59	---	---	---	14.53
4.54	199,633	597.47	9.00 oc	---	---	---	---	---	8.17	---	---	---	17.18
4.61	204,748	597.54	9.06 oc	---	---	---	---	---	11.07	---	---	---	20.13
4.67	209,863	597.60	9.11 oc	---	---	---	---	---	14.24	---	---	---	23.35
4.74	214,977	597.67	9.17 oc	---	---	---	---	---	17.66	---	---	---	26.83

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

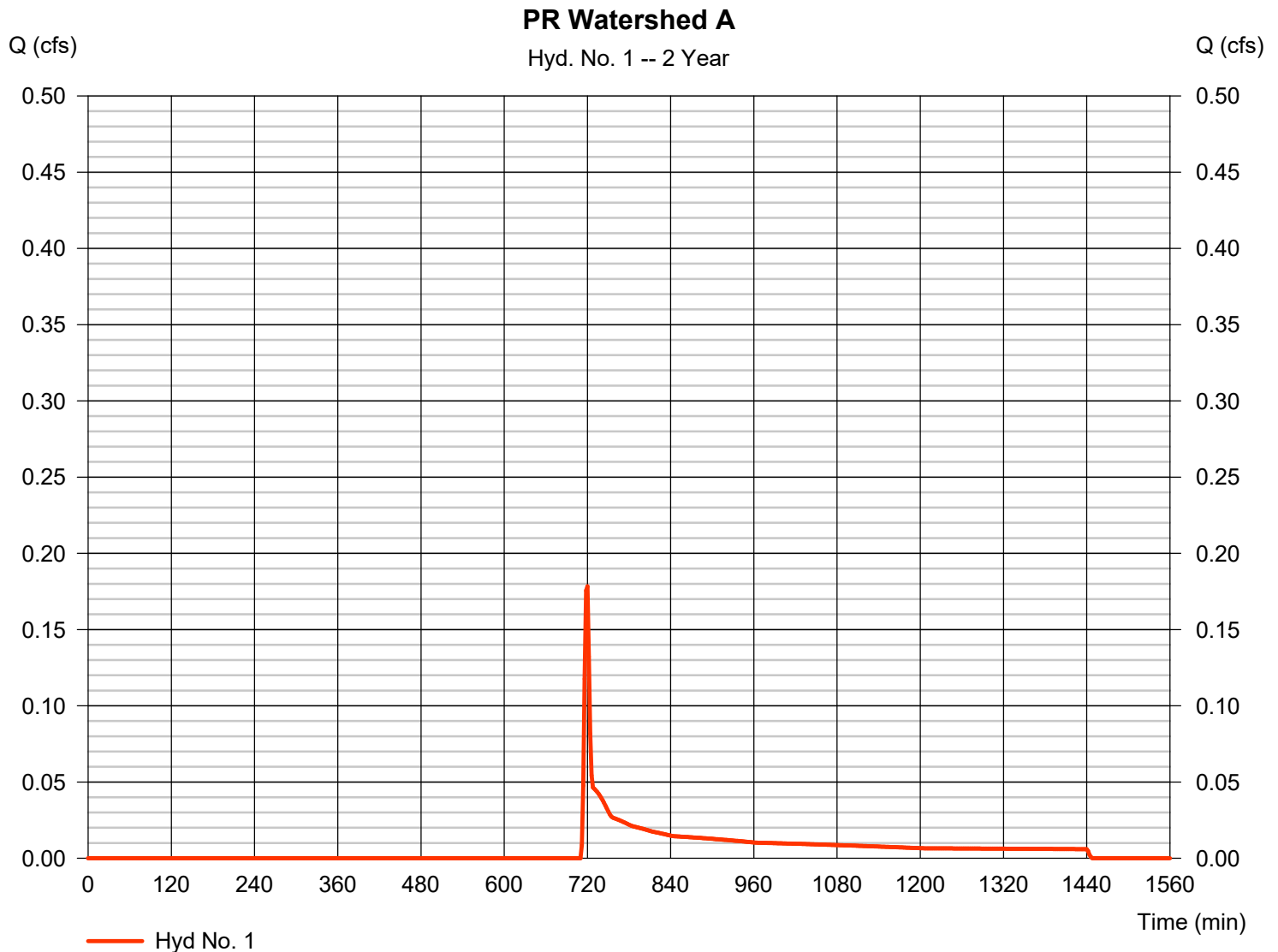
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 567 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

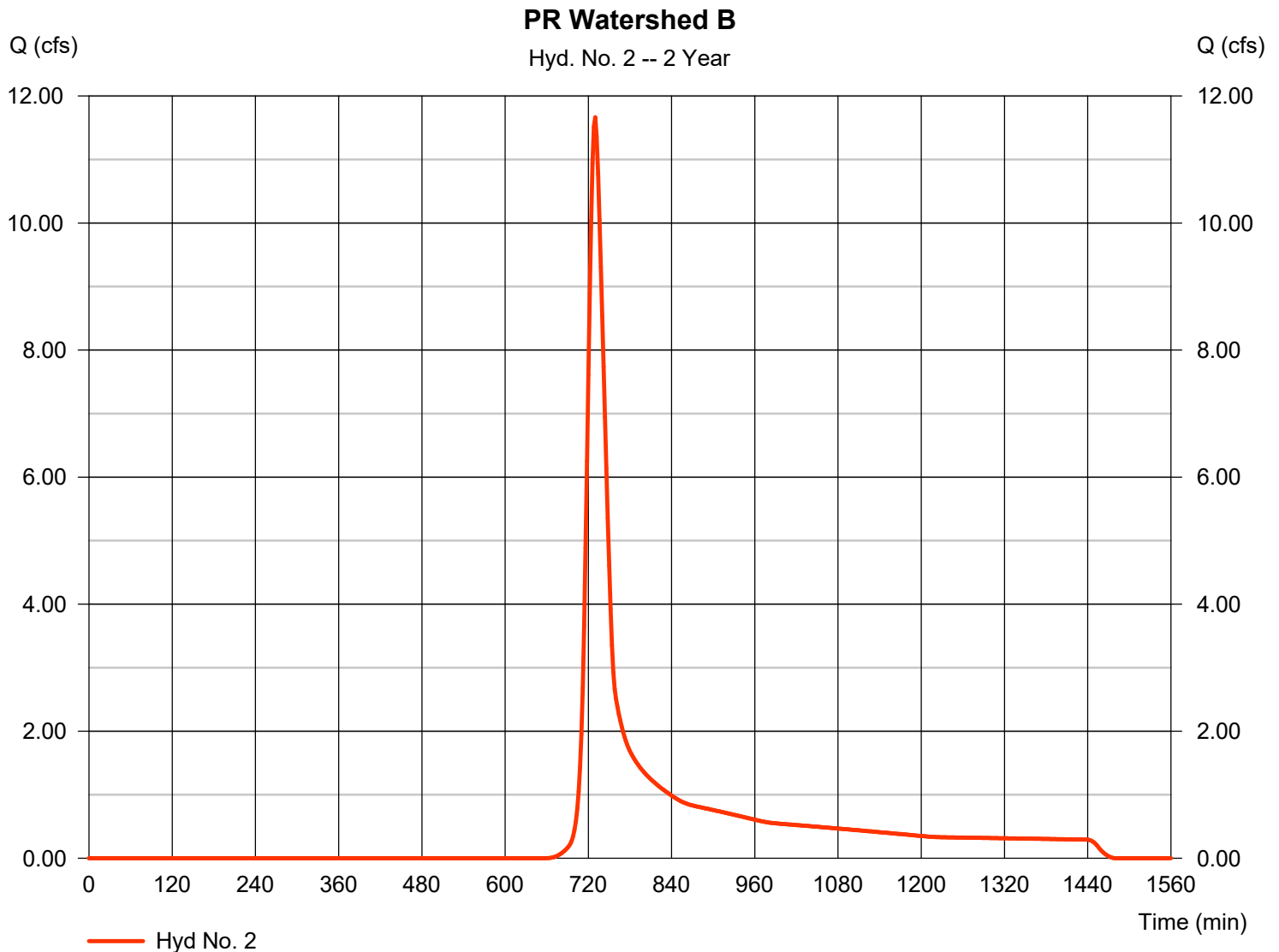
Tuesday, 05 / 25 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 11.66 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 45,856 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

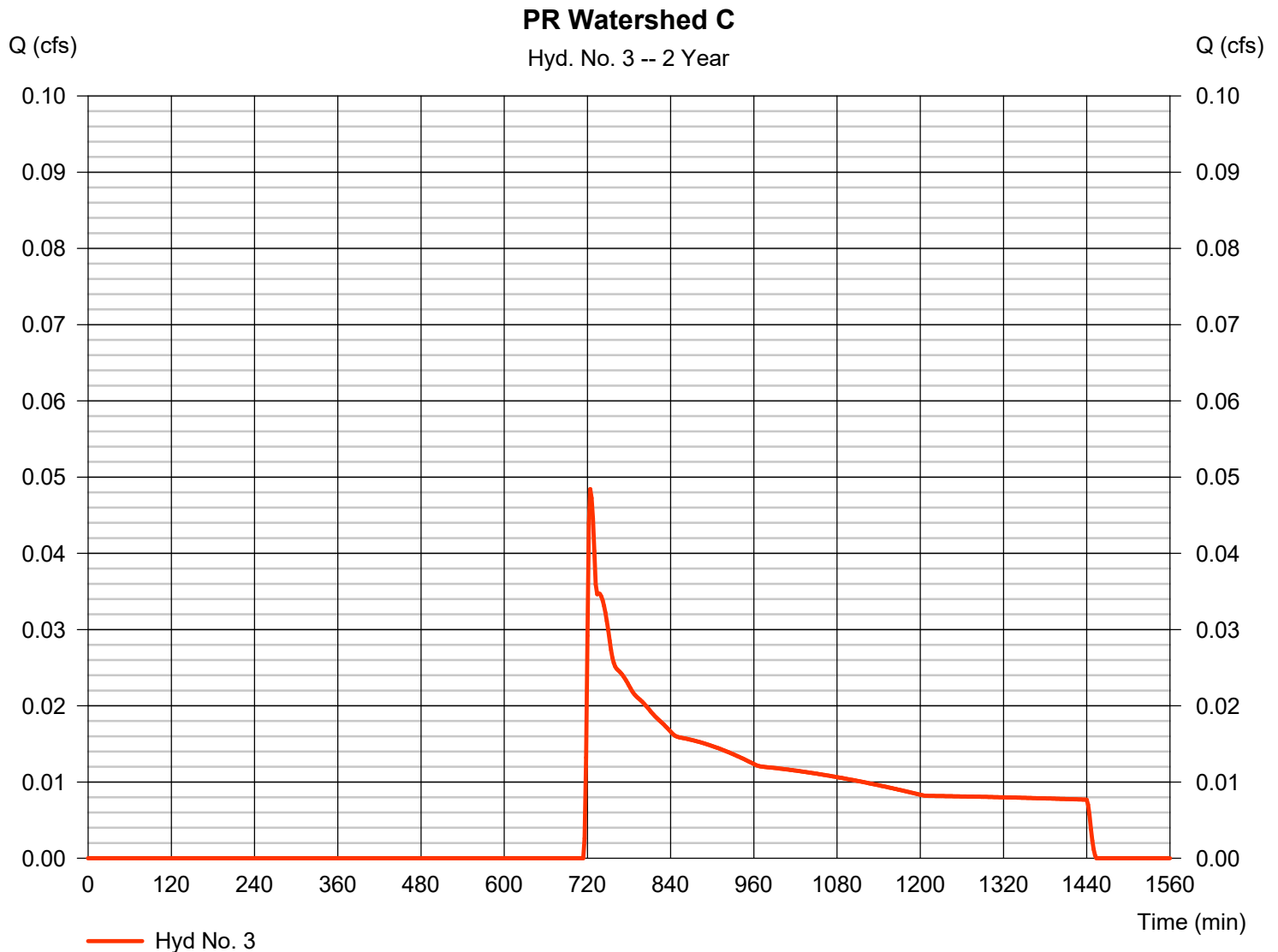
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.048 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 560 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

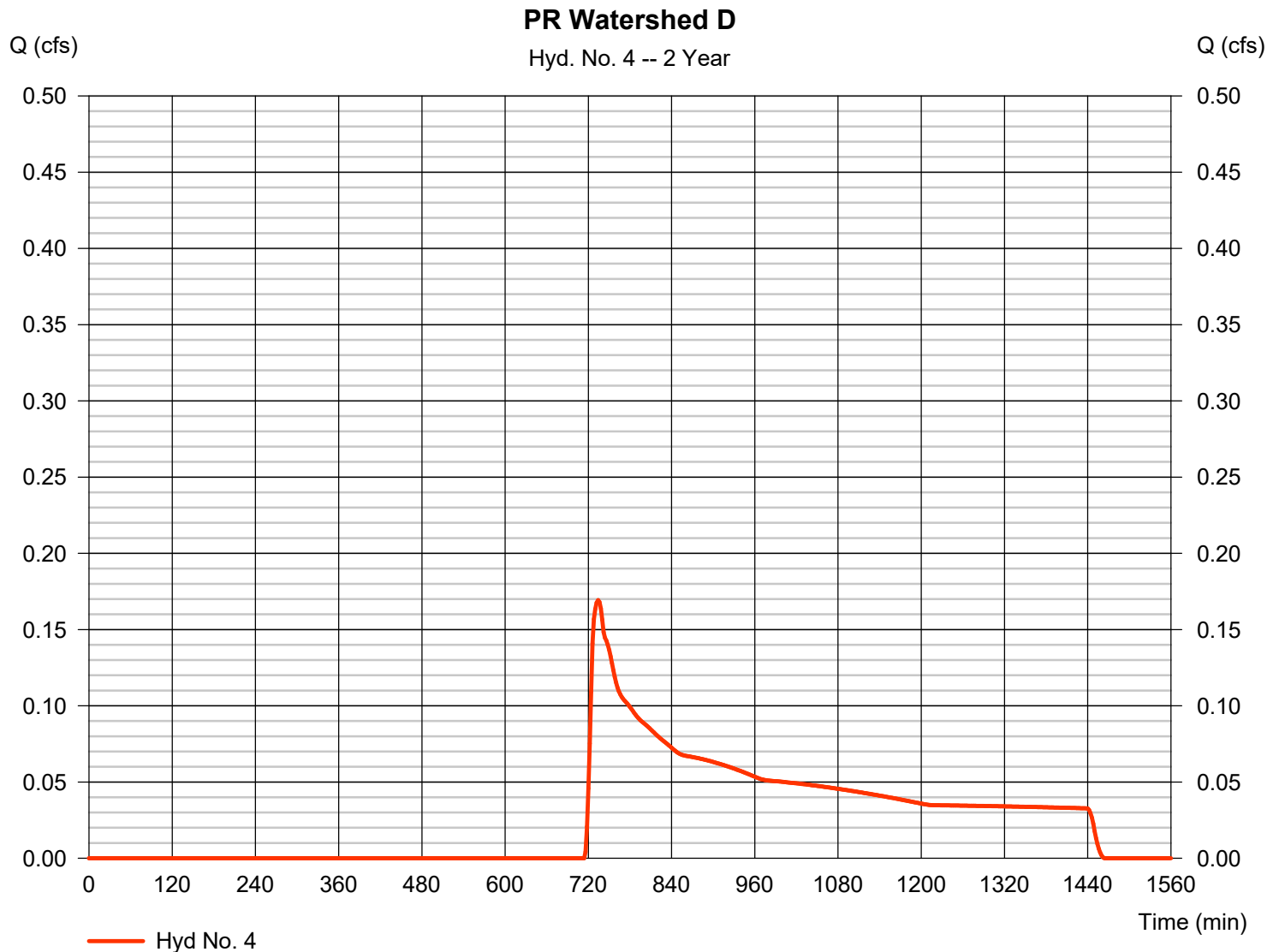
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 0.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 2,379 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

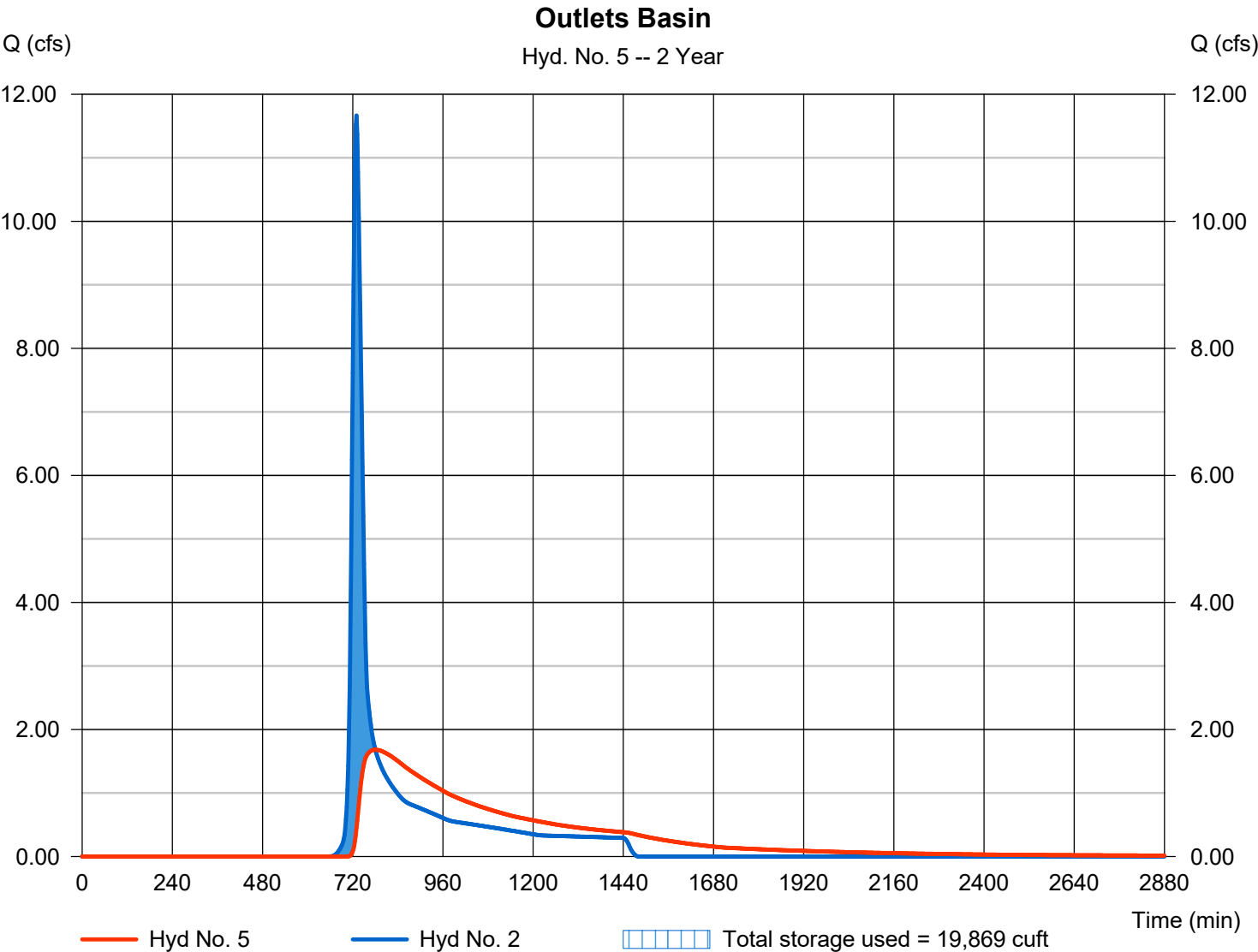
Tuesday, 05 / 25 / 2021

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 1.681 cfs
Storm frequency	= 2 yrs	Time to peak	= 780 min
Time interval	= 2 min	Hyd. volume	= 45,333 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 593.56 ft
Reservoir name	= Pond Update	Max. Storage	= 19,869 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

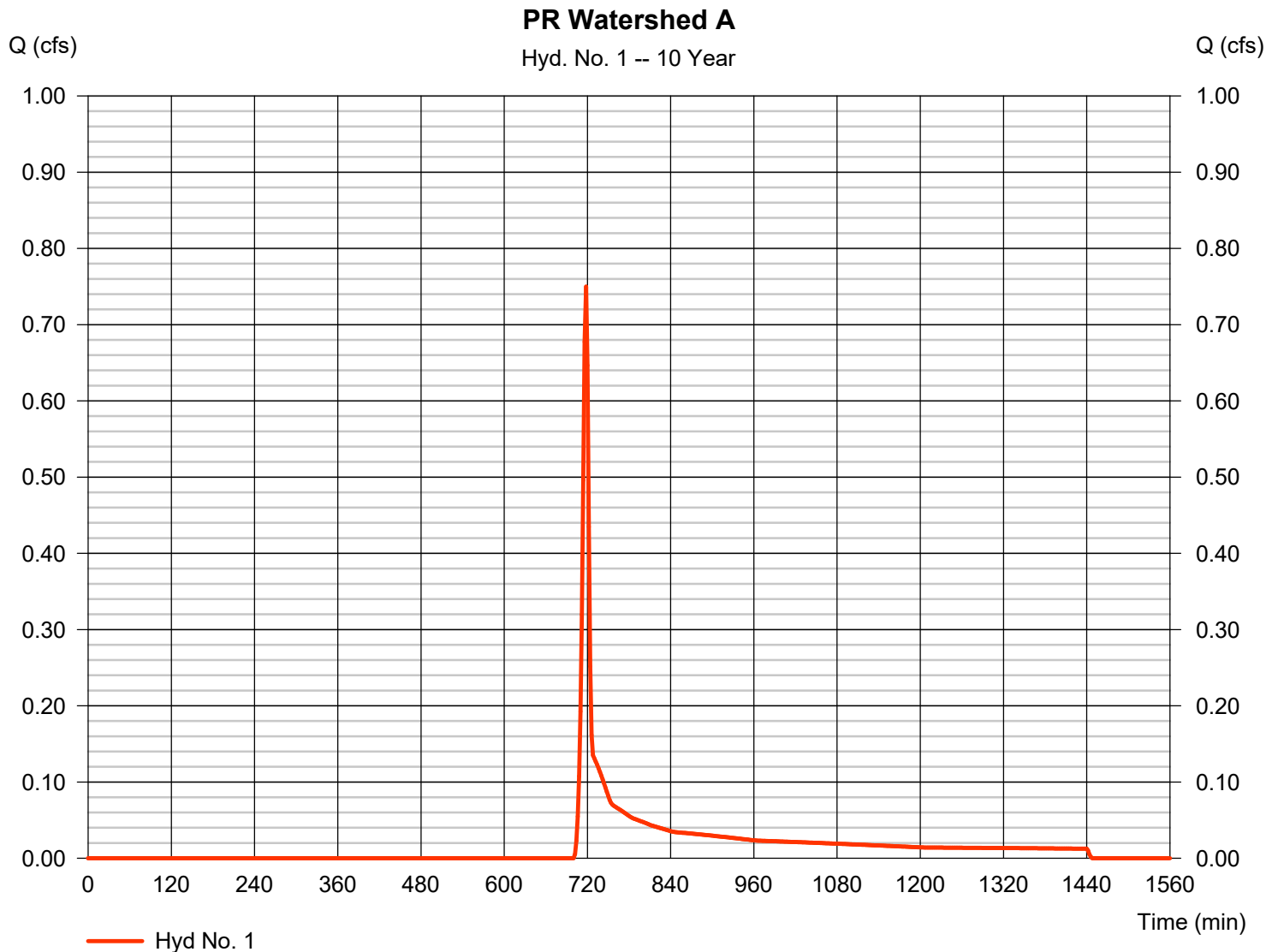
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.750 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,606 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

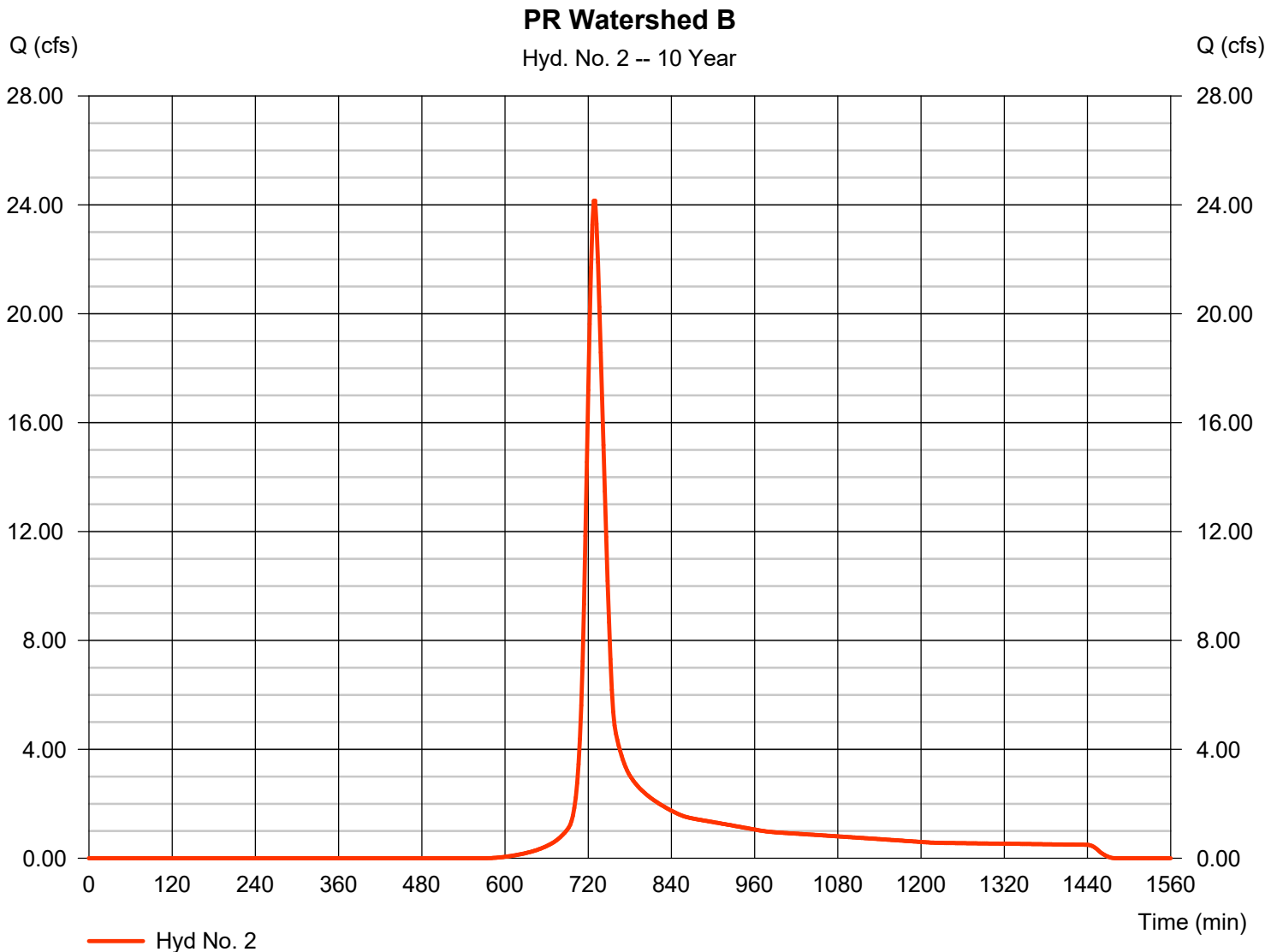
Tuesday, 05 / 25 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 24.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 90,363 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

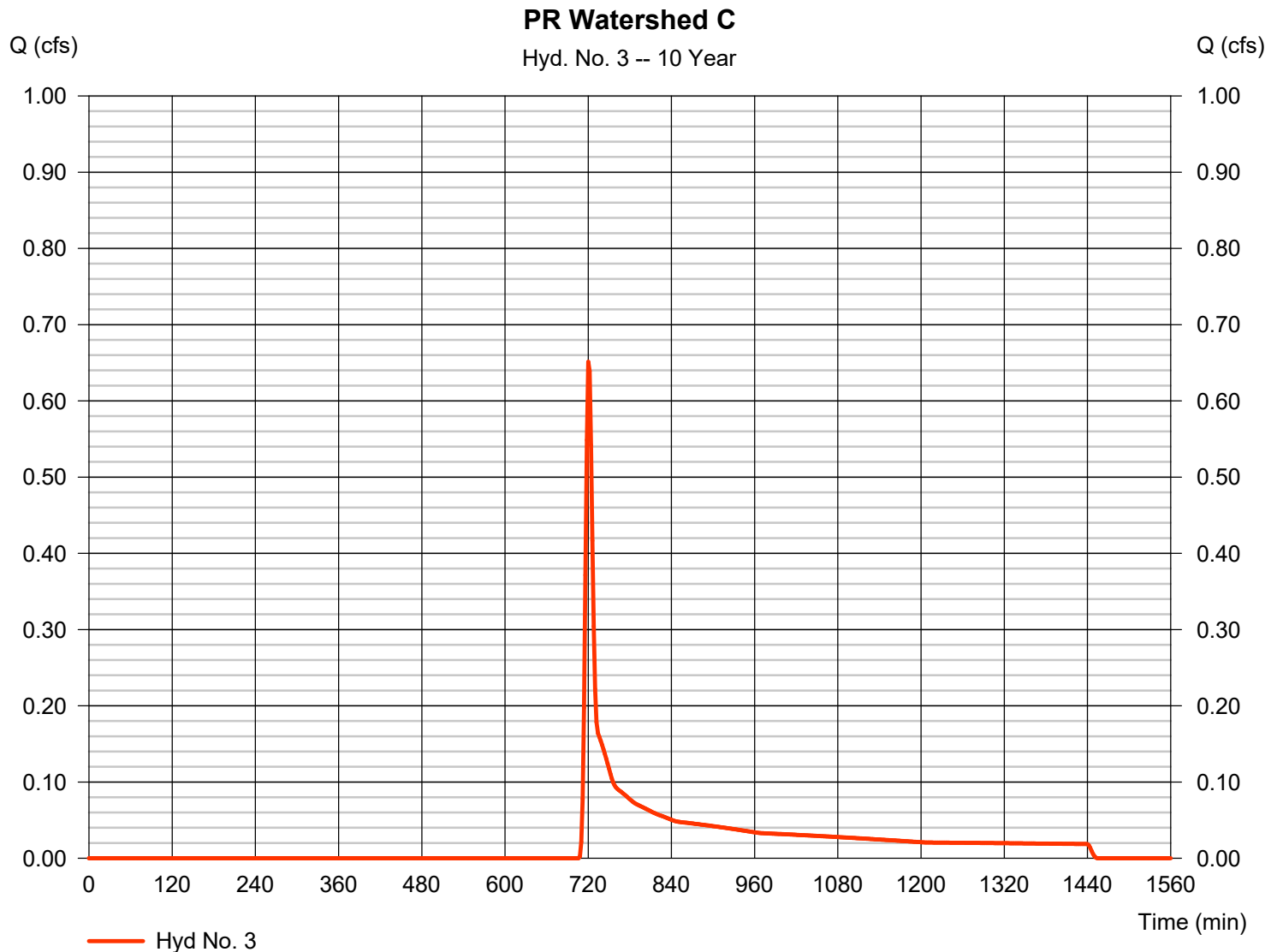
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.651 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 2,026 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

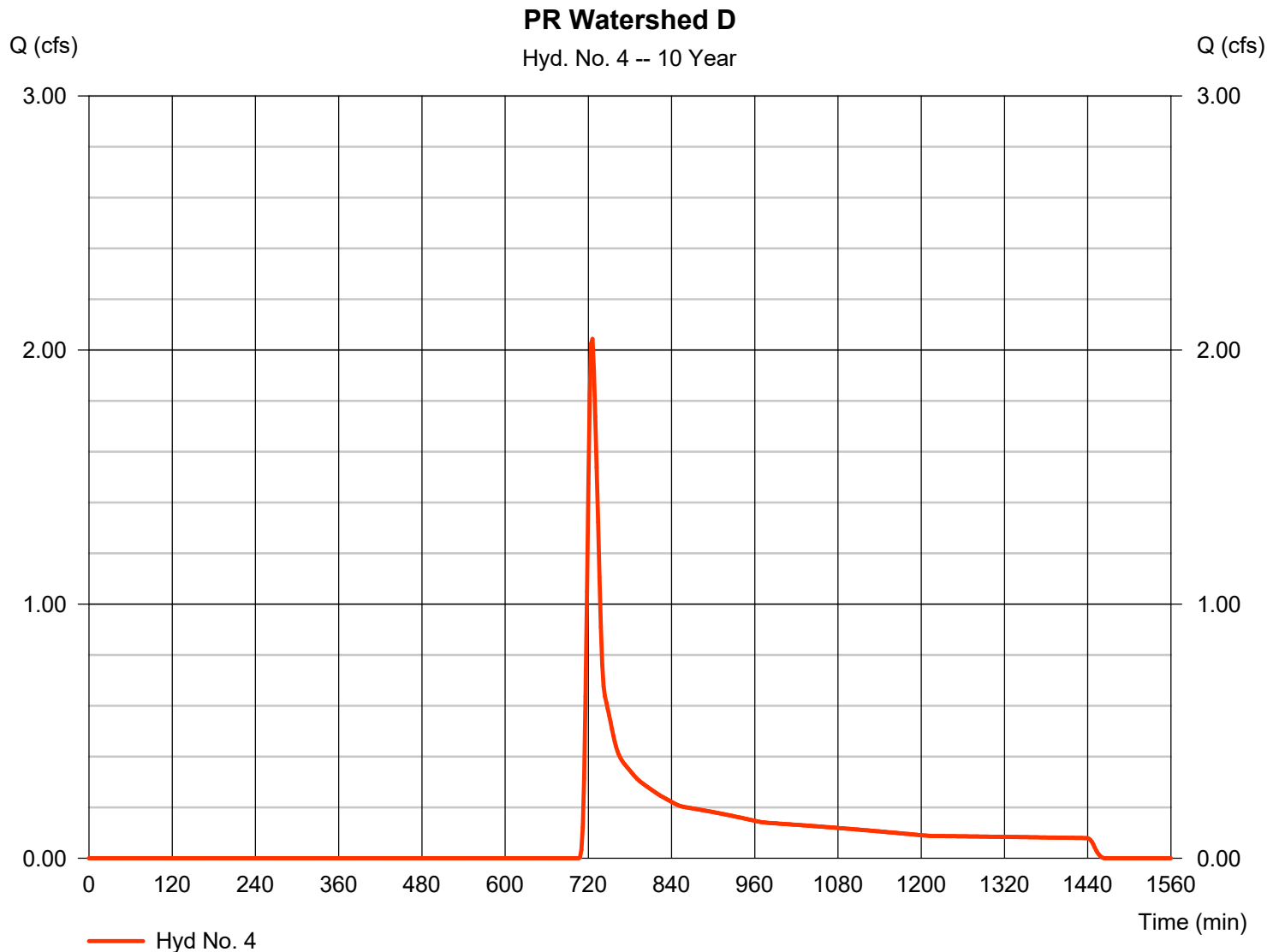
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.044 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 8,614 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

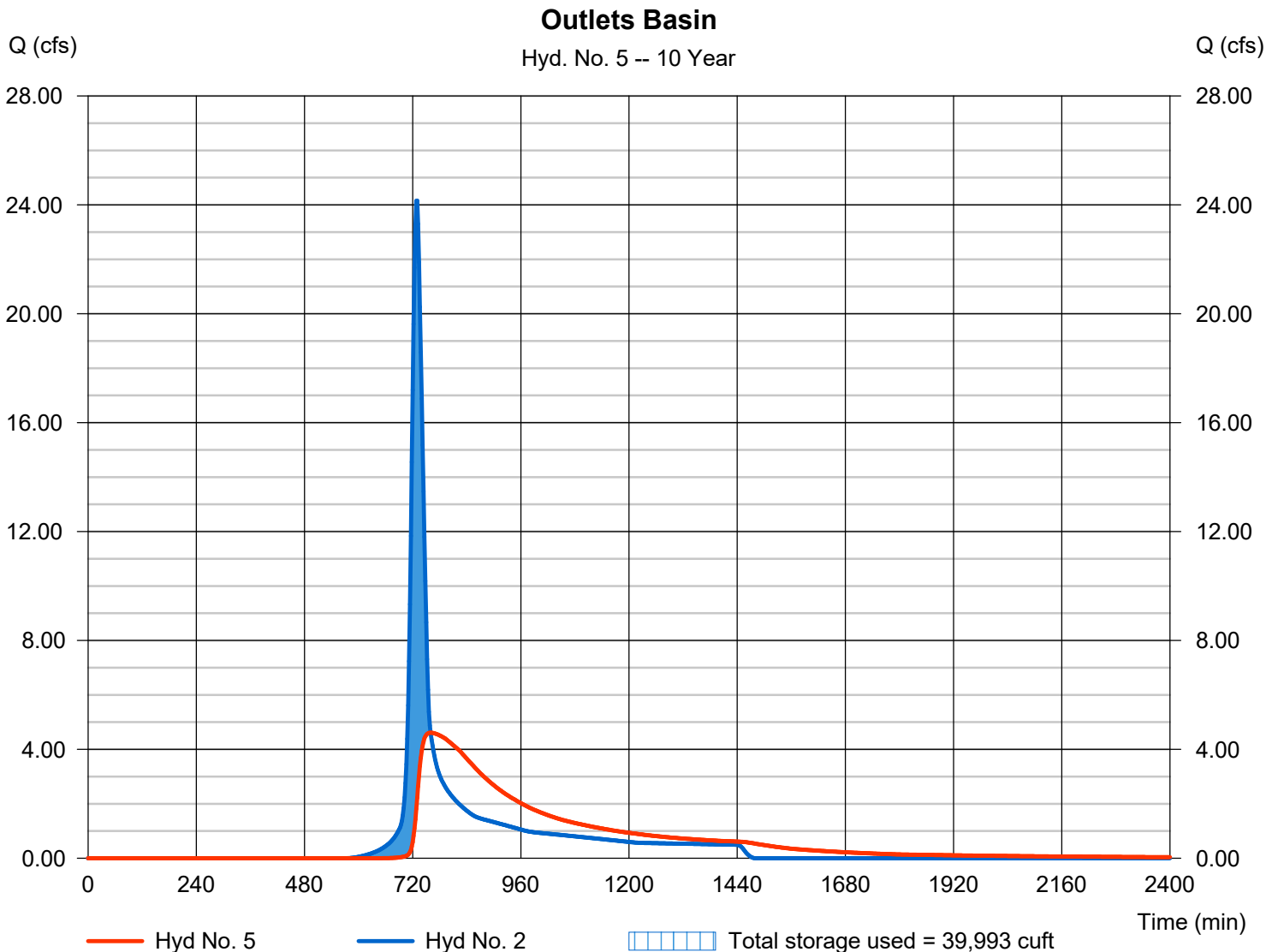
Tuesday, 05 / 25 / 2021

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 4.610 cfs
Storm frequency	= 10 yrs	Time to peak	= 760 min
Time interval	= 2 min	Hyd. volume	= 89,829 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 594.16 ft
Reservoir name	= Pond Update	Max. Storage	= 39,993 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

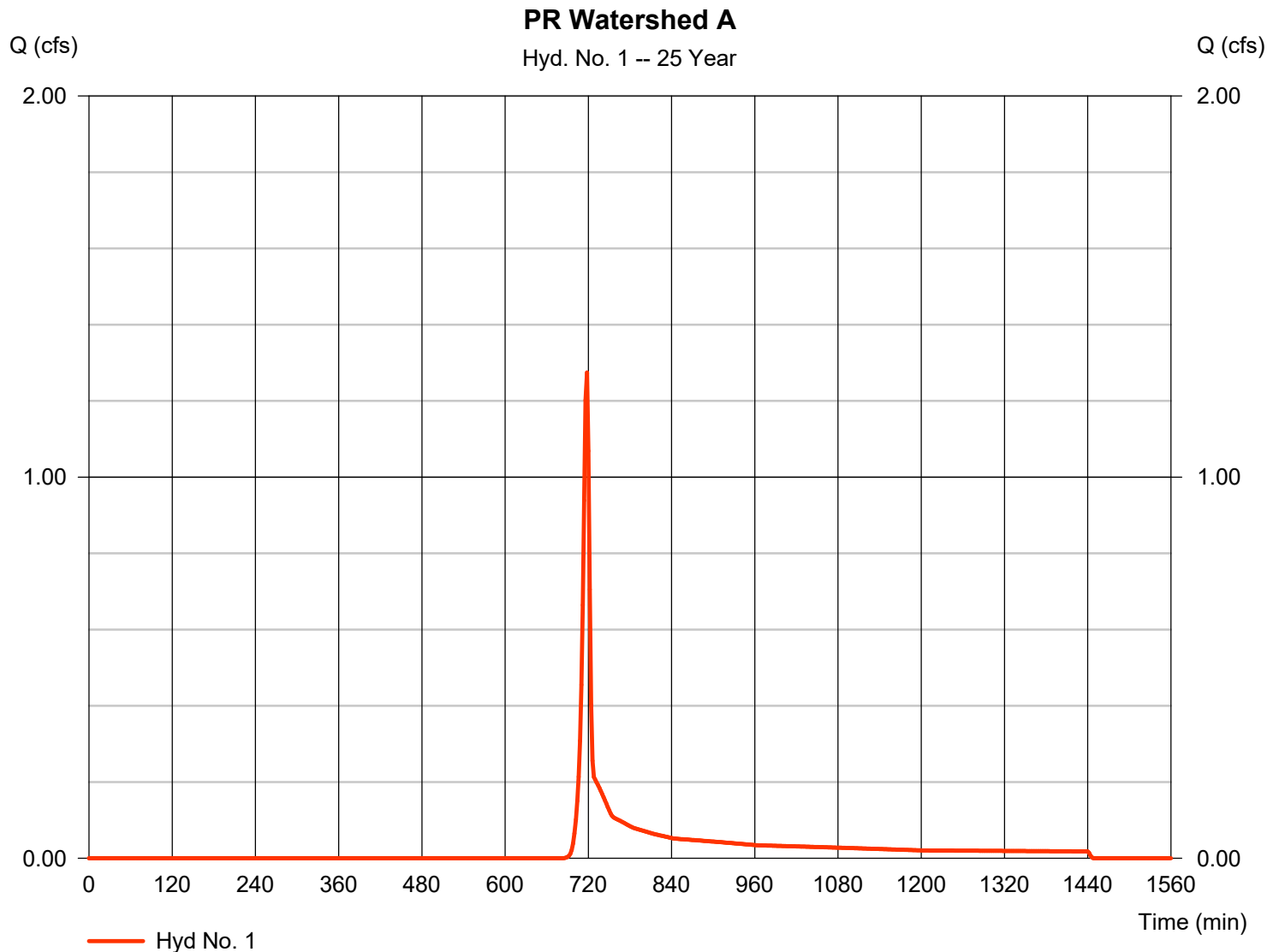
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.275 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,598 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

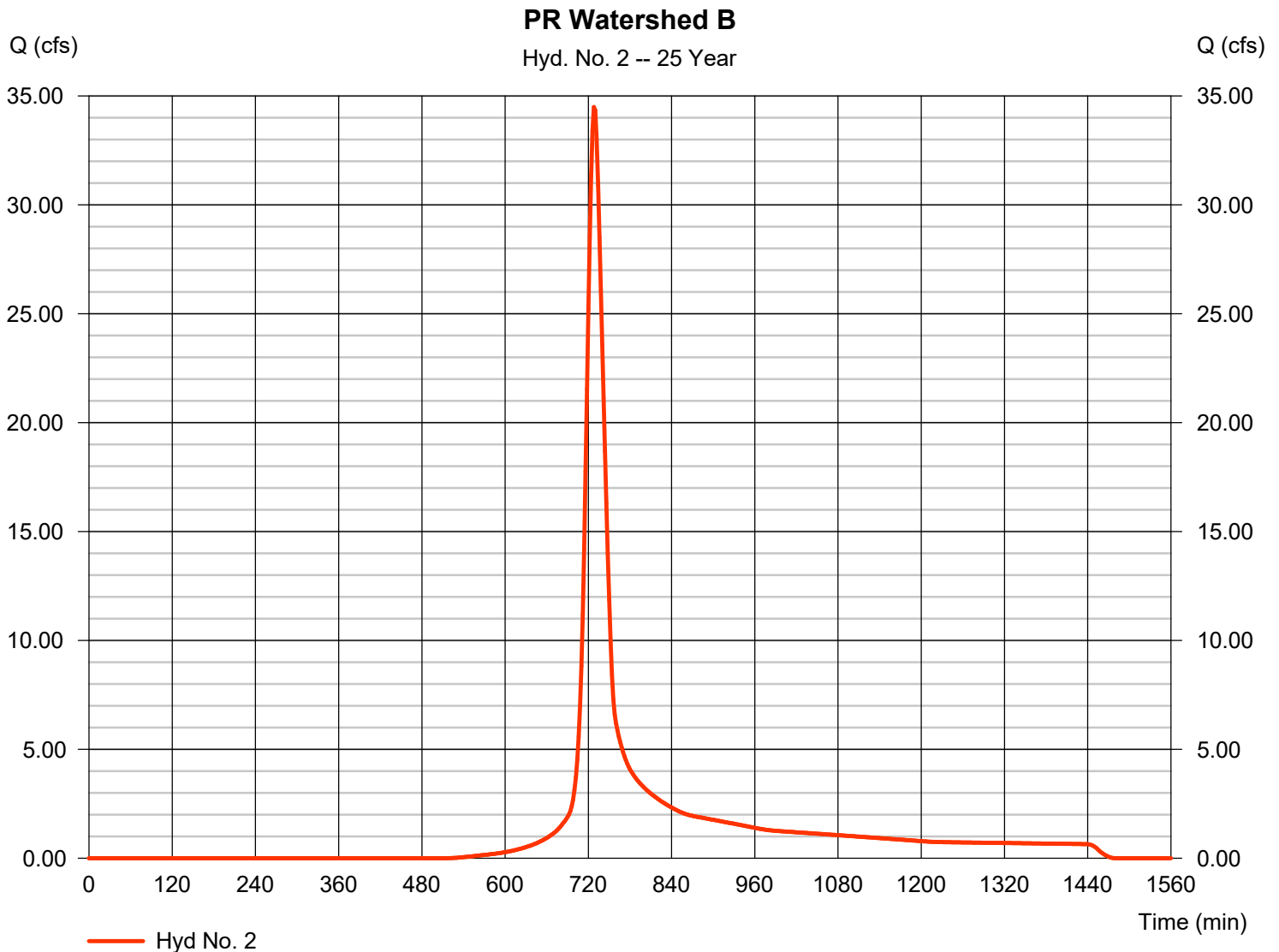
Hyd. No. 2

PR Watershed B

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 18.650 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.84 in
 Storm duration = 24 hrs

Peak discharge = 34.49 cfs
 Time to peak = 728 min
 Hyd. volume = 127,299 cuft
 Curve number = 80*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 23.60 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

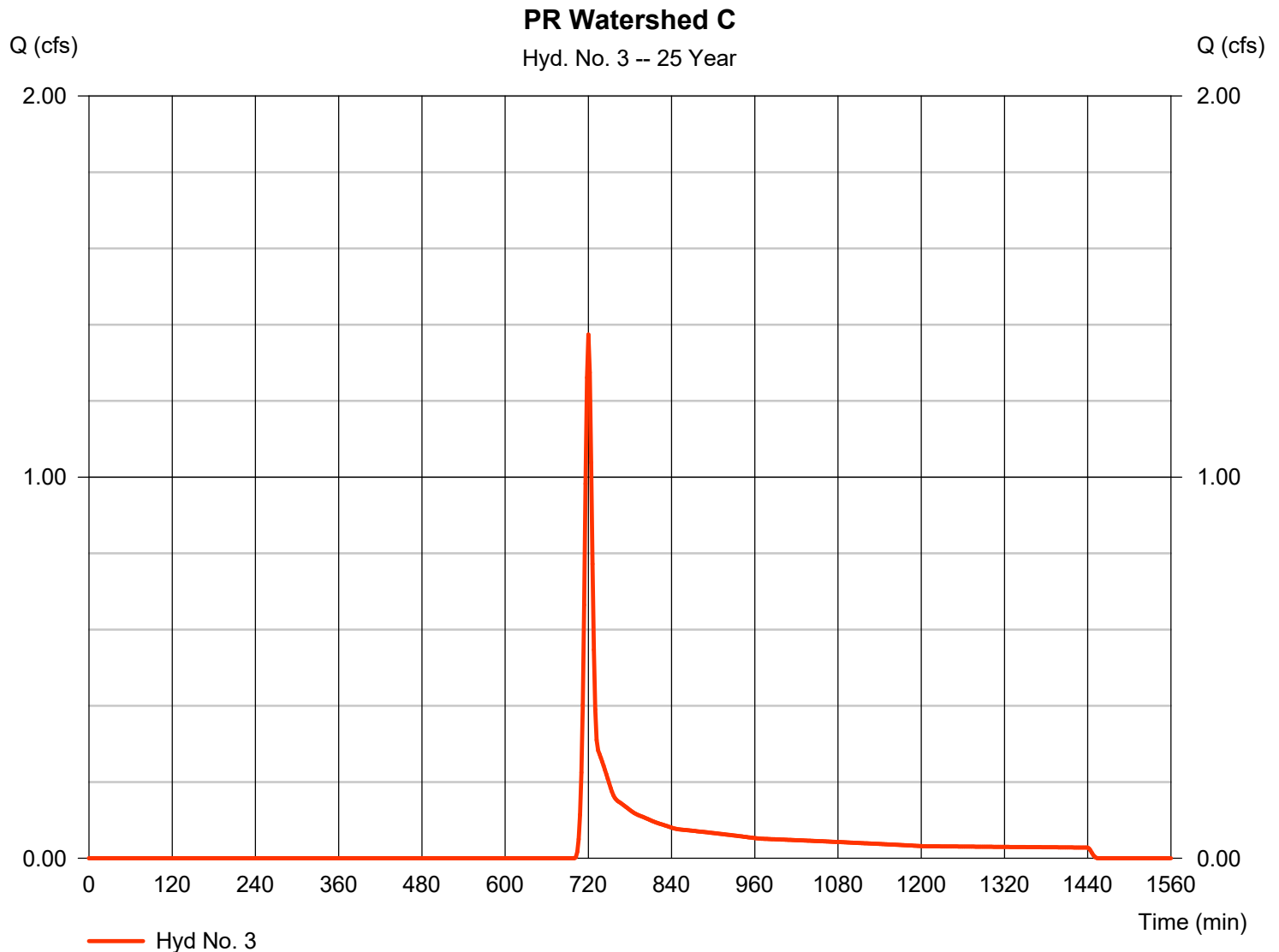
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.374 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 3,537 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

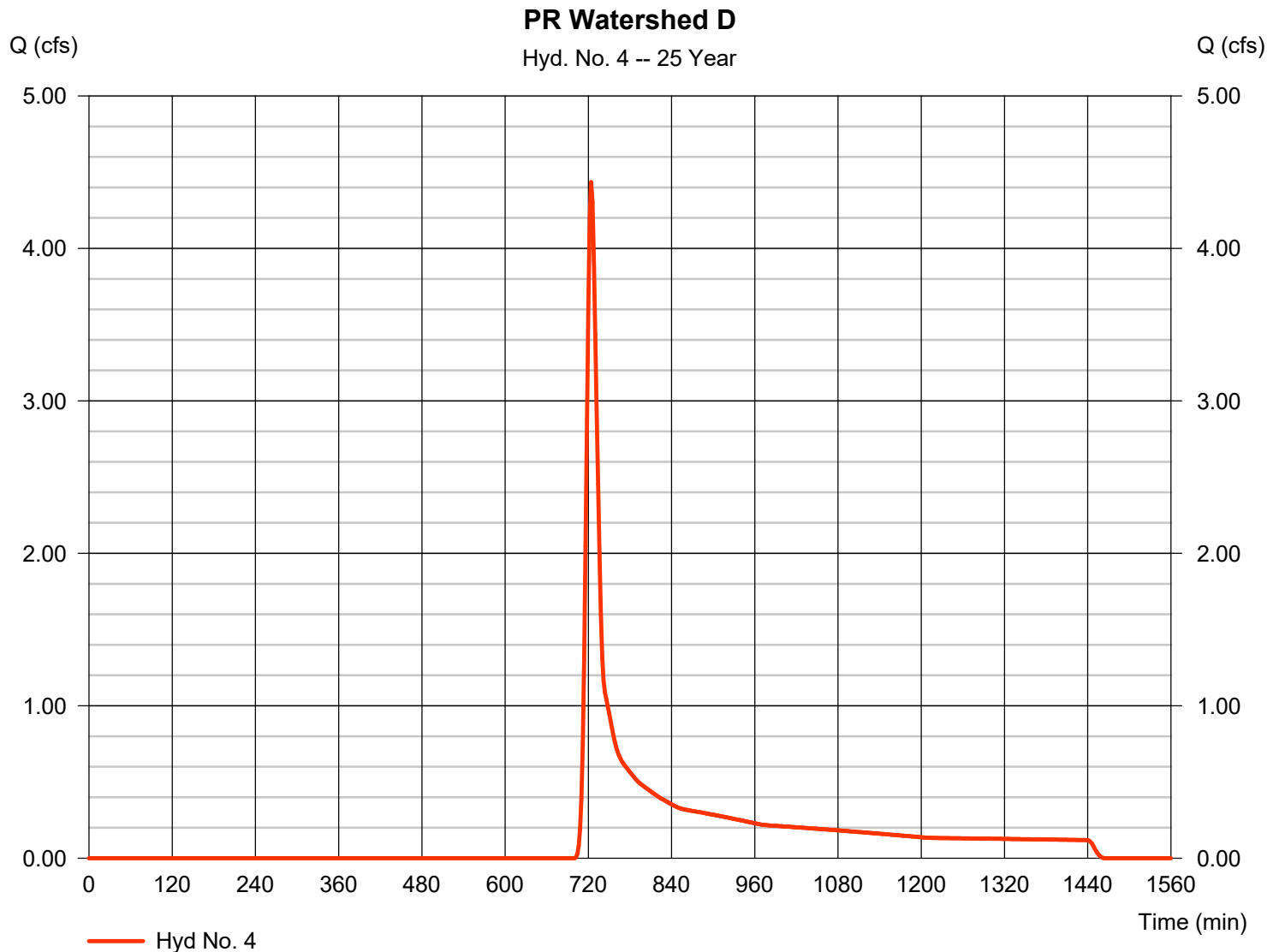
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.435 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 15,038 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

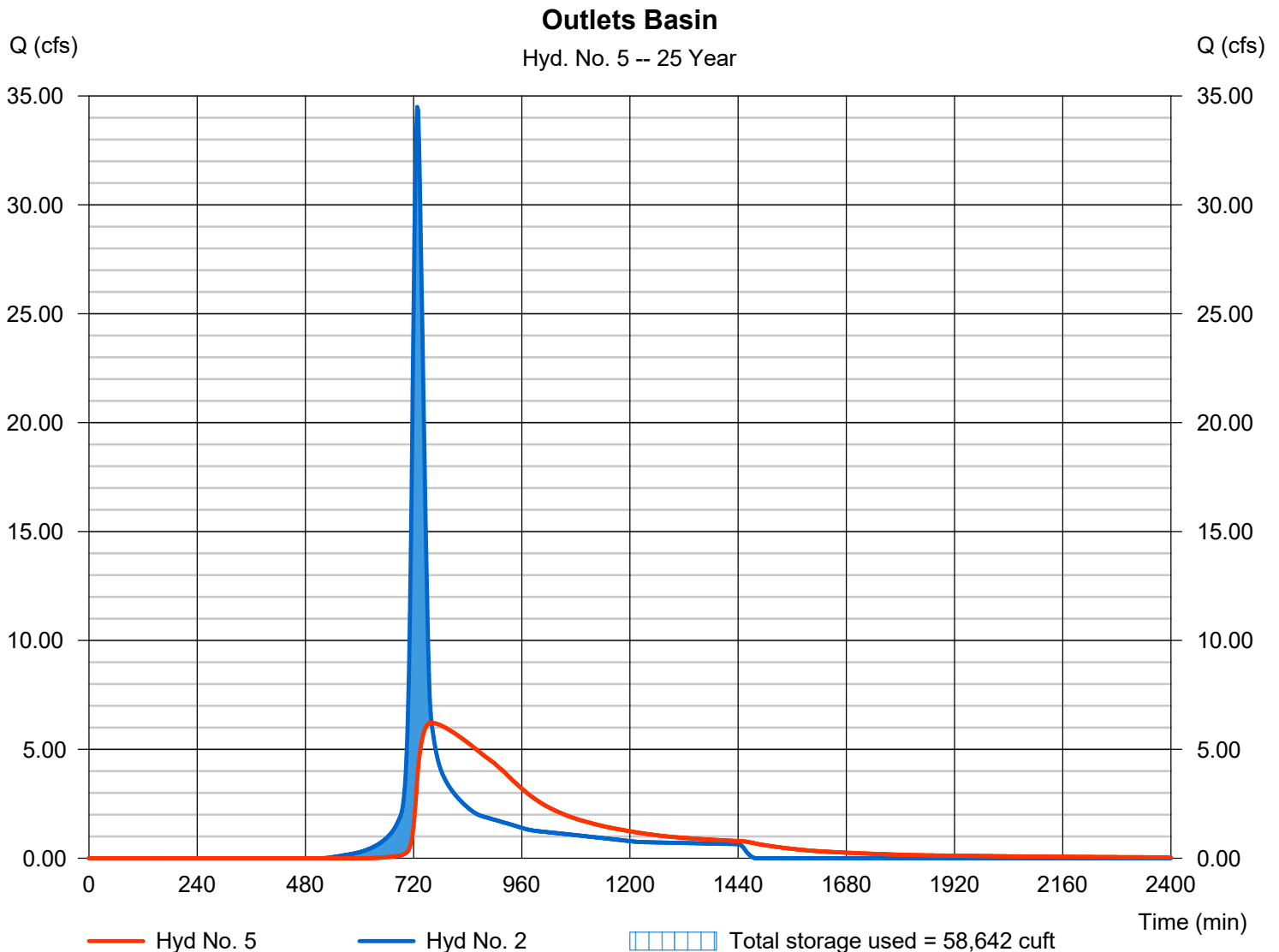
Tuesday, 05 / 25 / 2021

Hyd. No. 5

Outlets Basin

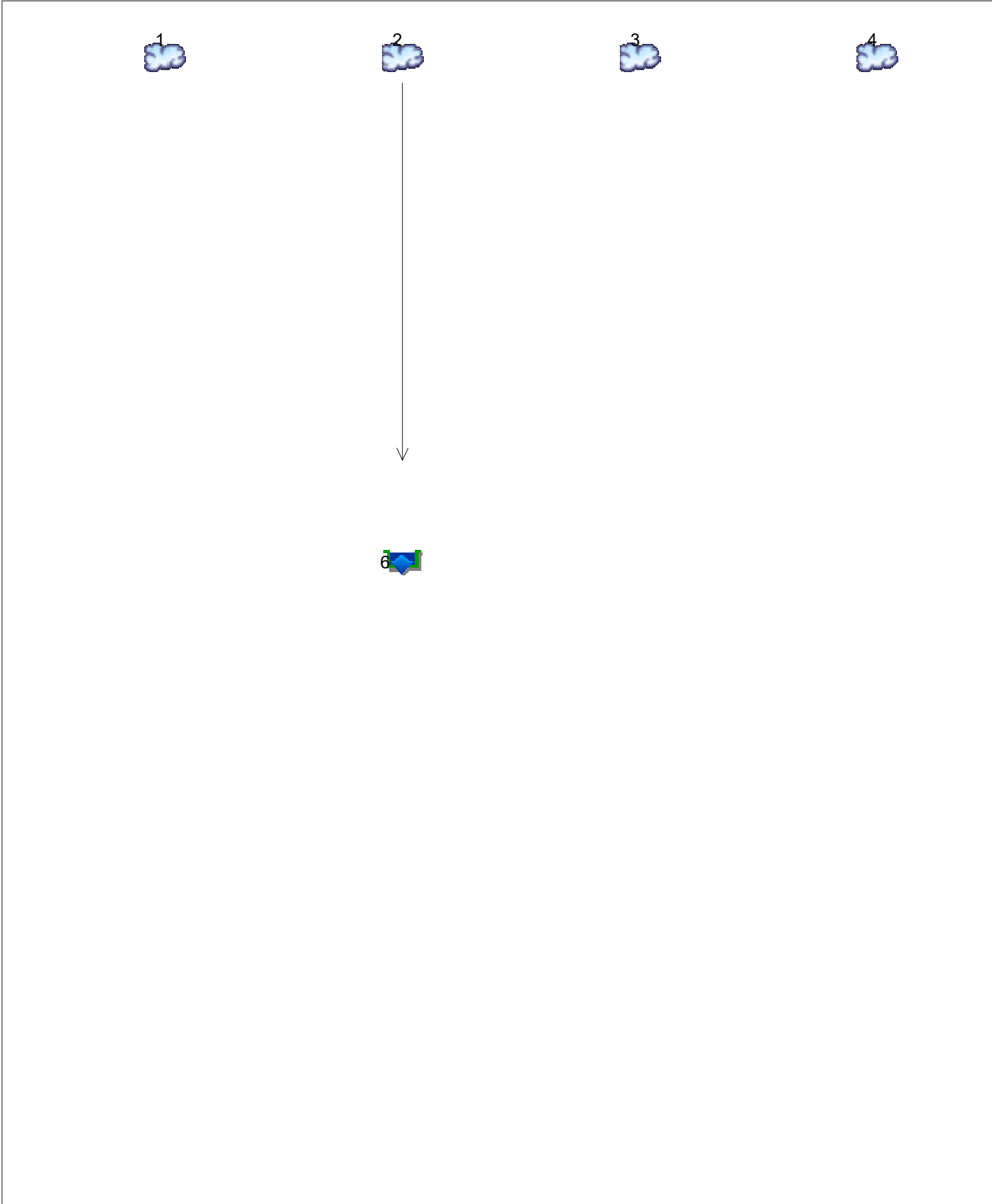
Hydrograph type	= Reservoir	Peak discharge	= 6.213 cfs
Storm frequency	= 25 yrs	Time to peak	= 760 min
Time interval	= 2 min	Hyd. volume	= 126,761 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 594.66 ft
Reservoir name	= Pond Update	Max. Storage	= 58,642 cuft

Storage Indication method used.



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

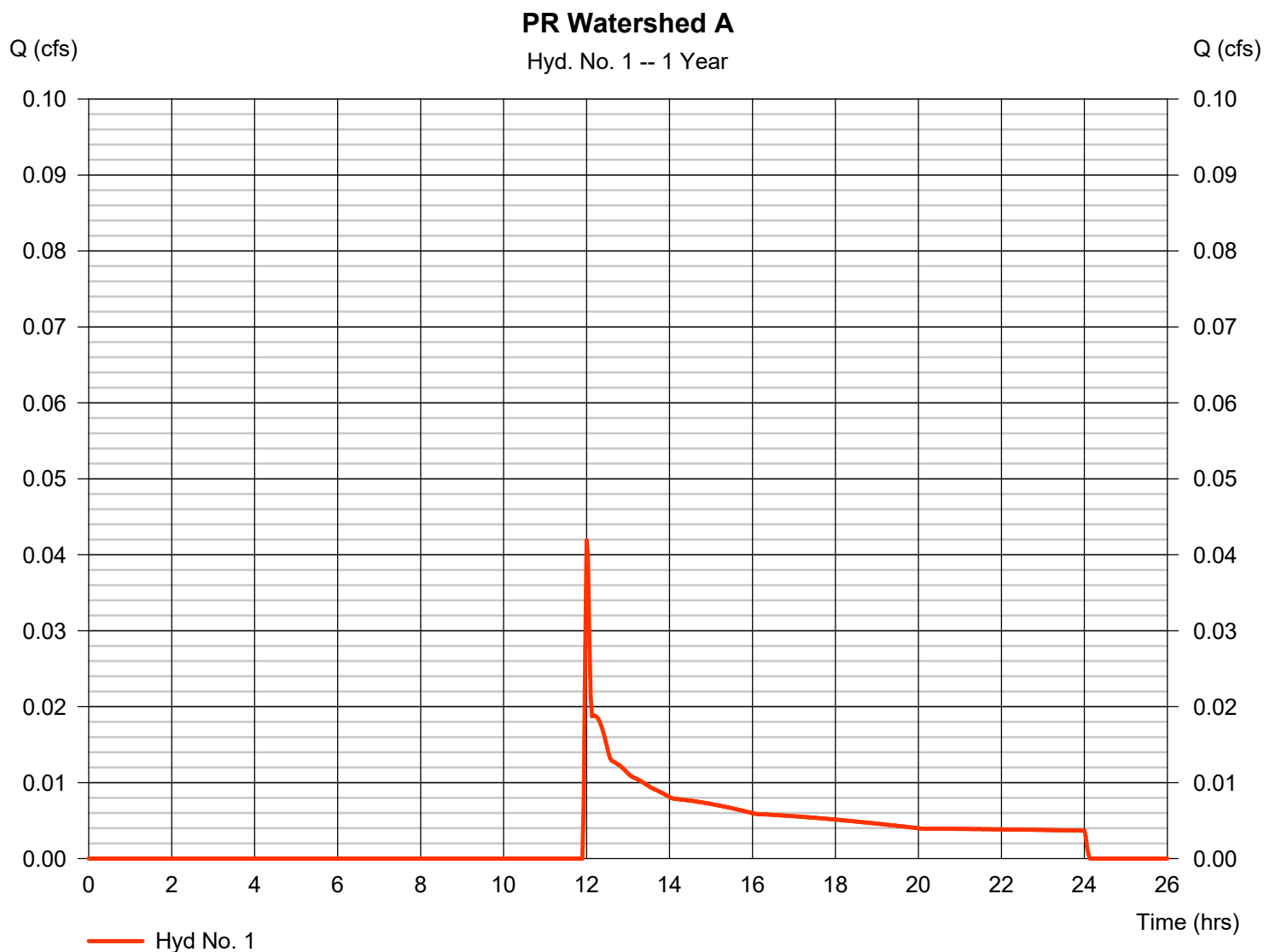
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 282 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



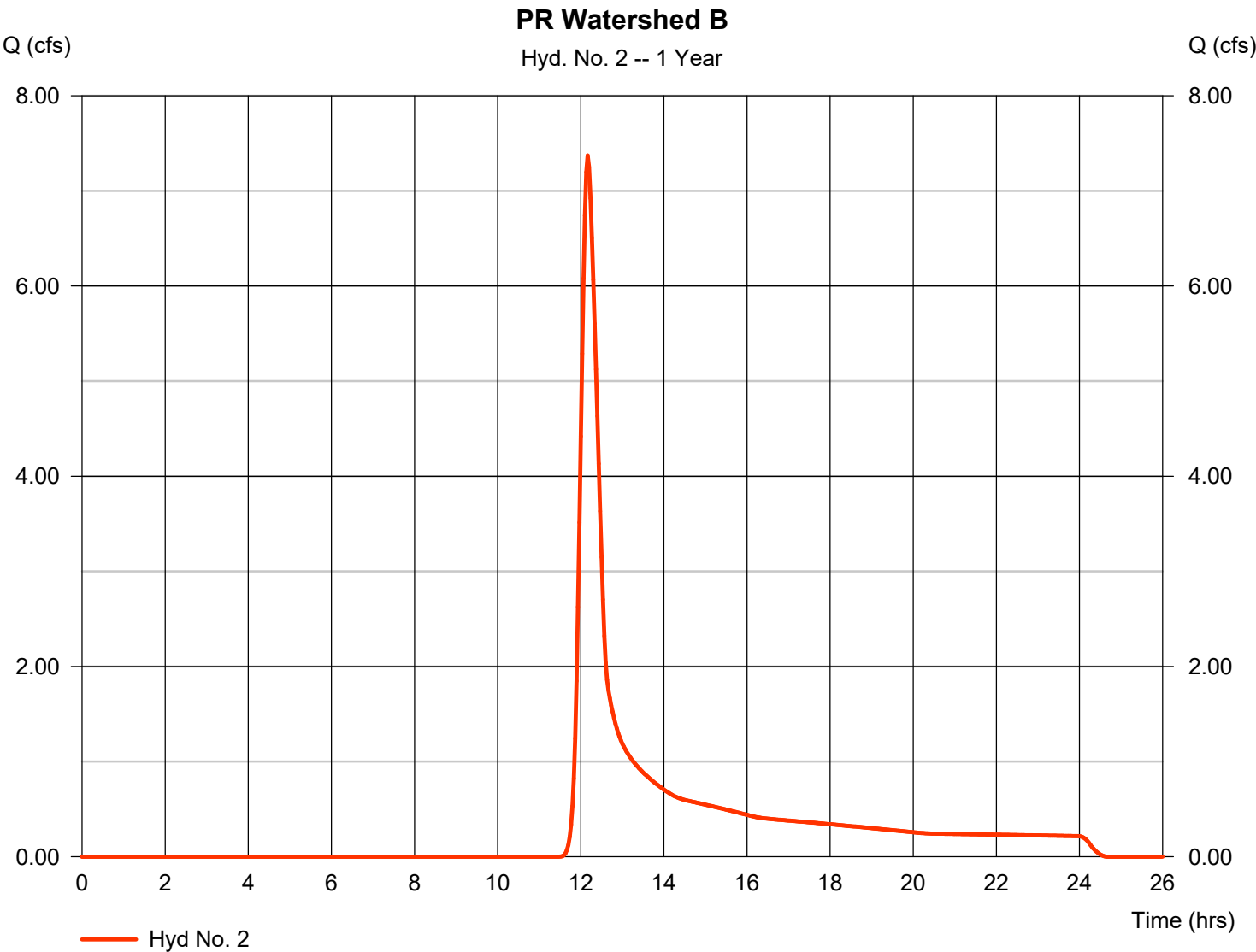
Hydrograph Report

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 7.371 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 30,778 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.900 x 98) + (0.140 x 98) + (5.640 x 85) + (6.970 x 61)] / 18.650



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 2

PR Watershed B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.240	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 1.06	0.00	0.00				
Travel Time (min)	= 22.19	+	0.00	+	0.00	=	22.19
Shallow Concentrated Flow							
Flow length (ft)	= 132.00	83.00	0.00				
Watercourse slope (%)	= 1.51	6.02	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=1.98	3.96	0.00				
Travel Time (min)	= 1.11	+	0.35	+	0.00	=	1.46
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				23.60 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

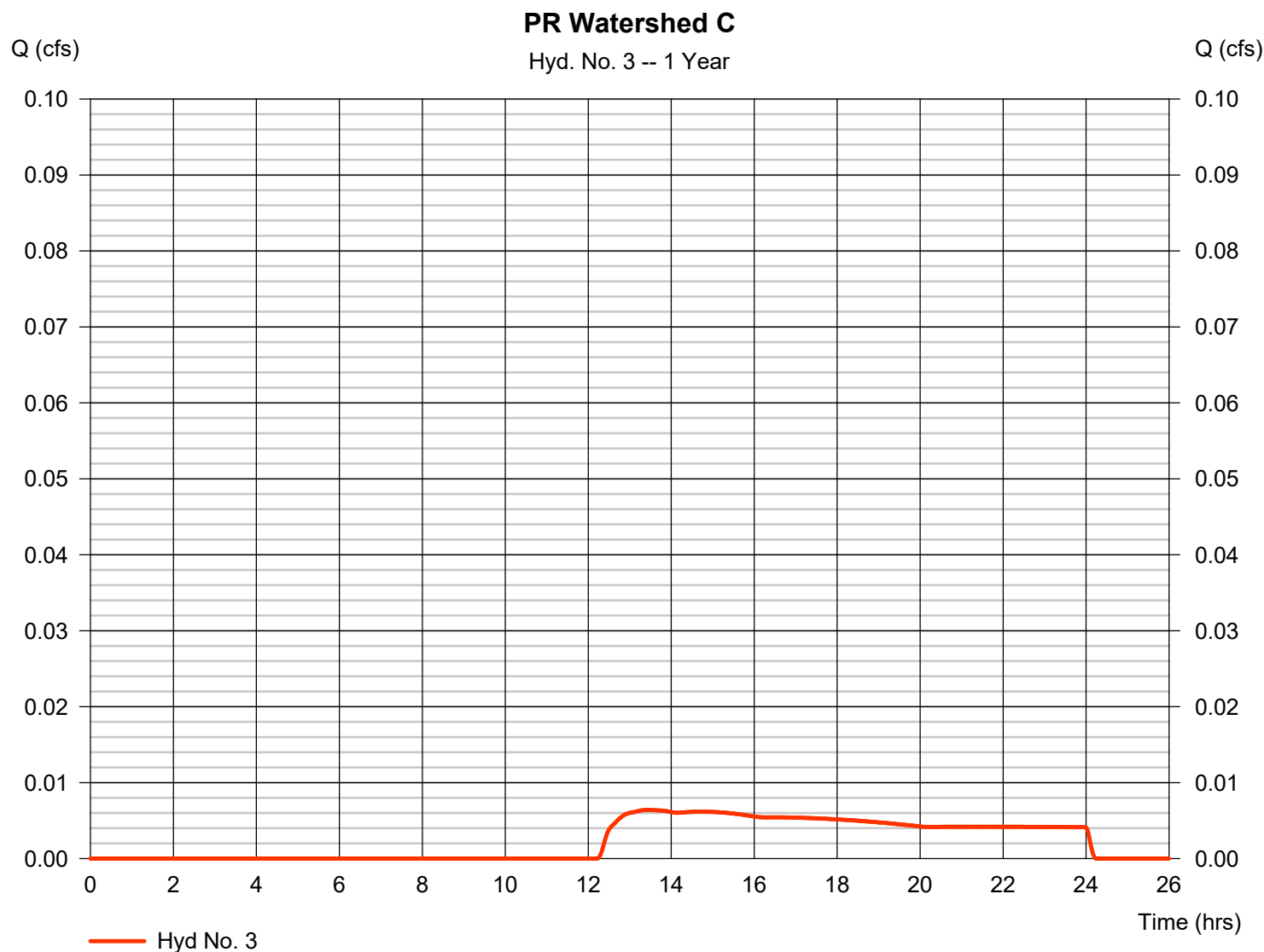
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.006 cfs
Storm frequency	= 1 yrs	Time to peak	= 13.43 hrs
Time interval	= 2 min	Hyd. volume	= 211 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 3

PR Watershed C

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00	
Land slope (%)	= 7.00	0.00	0.00	
Travel Time (min)	= 7.16	+	0.00	+
			0.00	= 7.16
Shallow Concentrated Flow				
Flow length (ft)	= 190.00	0.00	0.00	
Watercourse slope (%)	= 2.10	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=2.34	0.00	0.00	
Travel Time (min)	= 1.35	+	0.00	+
			0.00	= 1.35
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	(0)0.0	0.0	0.0	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Total Travel Time, Tc				8.50 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

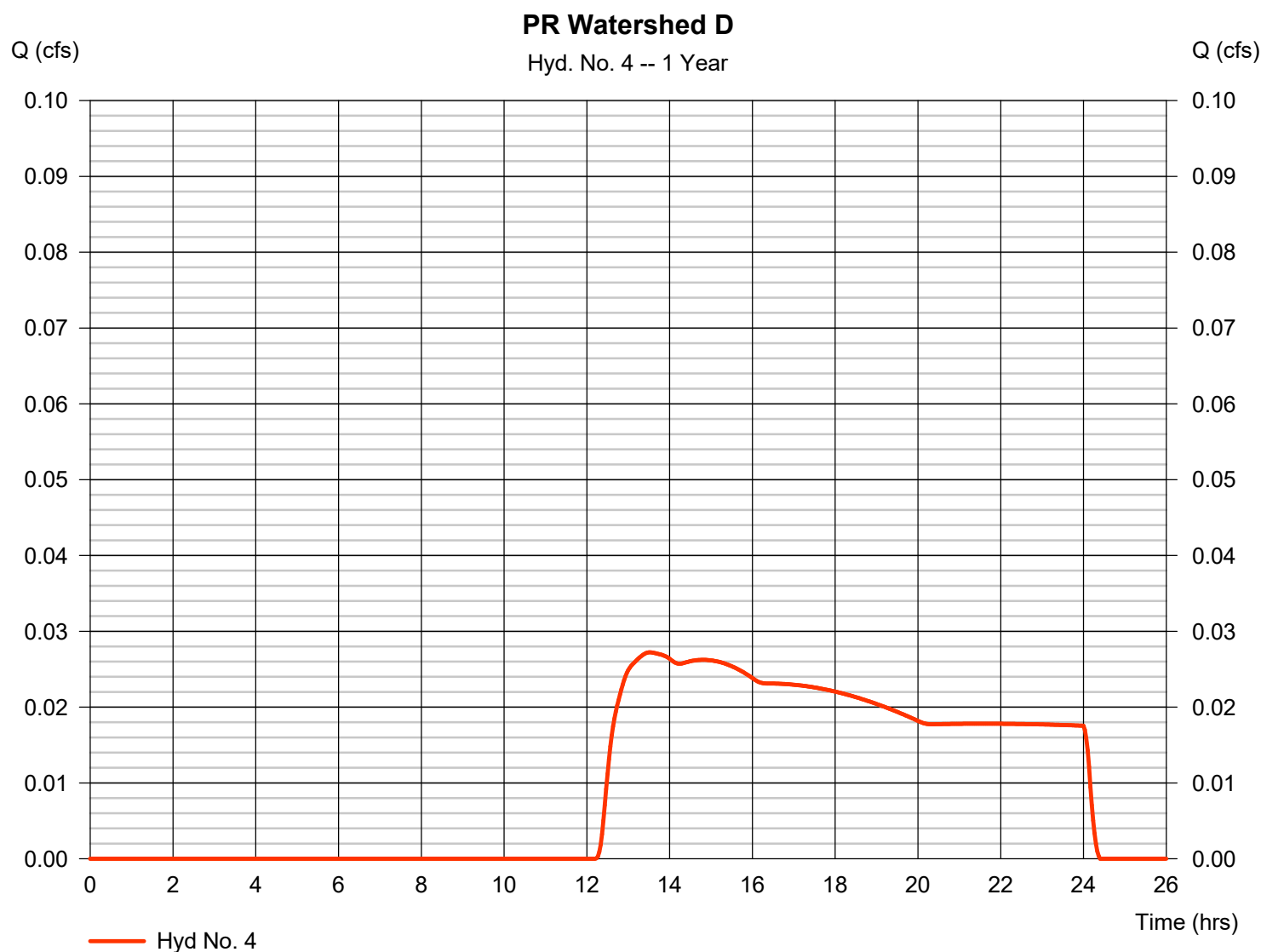
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.027 cfs
Storm frequency	=	1 yrs	Time to peak	=	13.53 hrs
Time interval	=	2 min	Hyd. volume	=	898 cuft
Drainage area	=	5.800 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.70 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 4

PR Watershed D

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 1.67	0.00	0.00				
Travel Time (min)	= 12.70	+	0.00	+	0.00	=	12.70
Shallow Concentrated Flow							
Flow length (ft)	= 206.00	119.00	0.00				
Watercourse slope (%)	= 1.61	0.84	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.05	1.48	0.00				
Travel Time (min)	= 1.68	+	1.34	+	0.00	=	3.02
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc					15.70 min		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

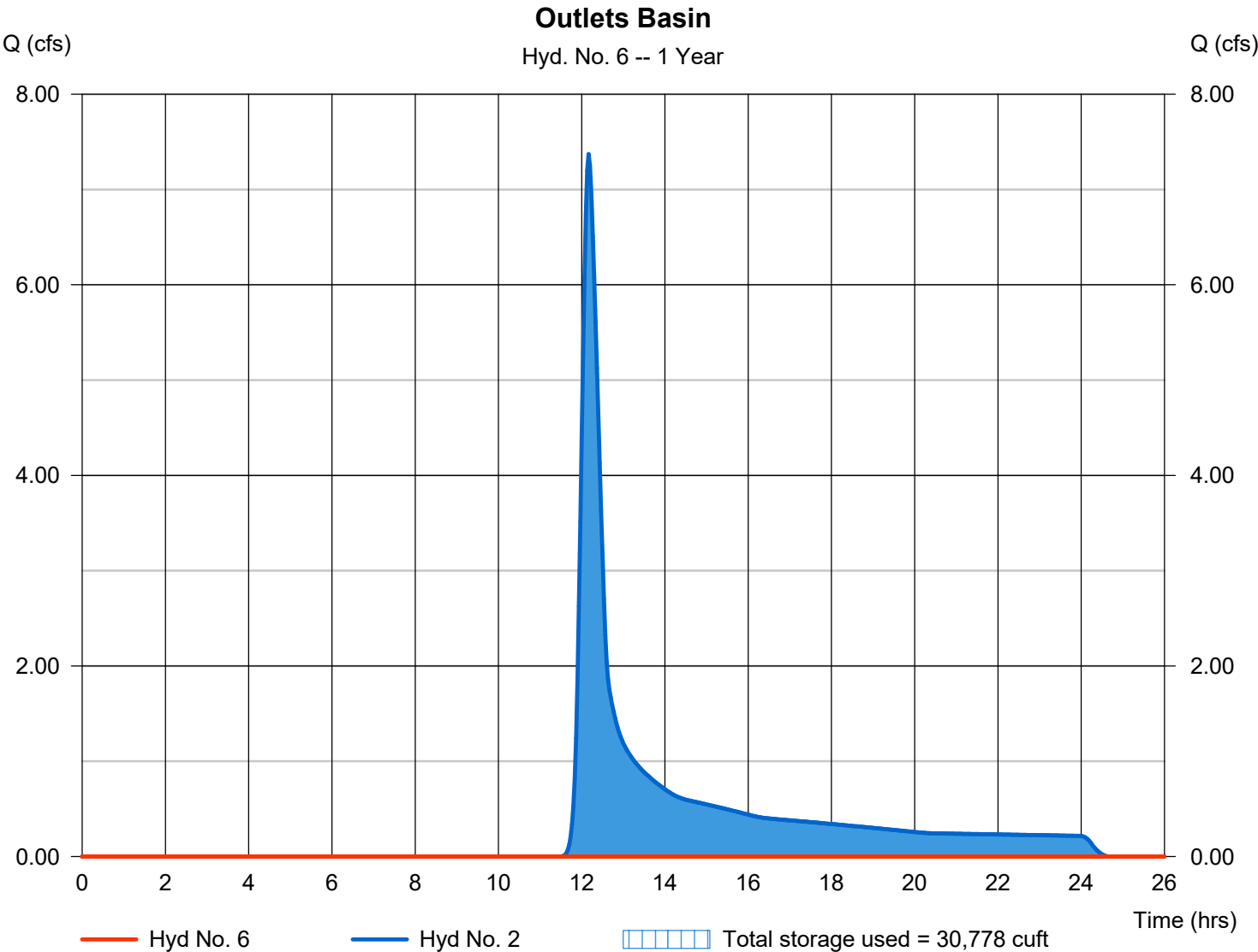
Tuesday, 05 / 25 / 2021

Hyd. No. 6

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 593.90 ft
Reservoir name	= Pond Update	Max. Storage	= 30,778 cuft

Storage Indication method used.



Pond Report

11

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Pond No. 1 - Pond Update

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 592.93 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	592.93	24,621	0	0
0.07	593.00	29,227	1,885	1,885
1.07	594.00	34,991	32,109	33,994
2.07	595.00	39,515	37,253	71,247
3.07	596.00	45,603	42,559	113,806
4.07	597.00	54,445	50,024	163,830
4.74	597.67	98,238	51,148	214,977

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 592.93	0.00	0.00	0.00
Length (ft)	= 220.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	15.00	0.00
Crest El. (ft)	= 0.00	0.00	597.17	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	Ciphti	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	592.93	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.01	188	592.94	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.01	377	592.94	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.02	565	592.95	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.03	754	592.96	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.04	942	592.97	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.04	1,131	592.97	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.05	1,319	592.98	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.06	1,508	592.99	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.06	1,696	592.99	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.07	1,885	593.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.17	5,096	593.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.27	8,307	593.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.37	11,518	593.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.47	14,728	593.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.57	17,939	593.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.67	21,150	593.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.77	24,361	593.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.87	27,572	593.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.97	30,783	593.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.07	33,994	594.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.17	37,719	594.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.27	41,444	594.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.37	45,170	594.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.47	48,895	594.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.57	52,620	594.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.67	56,346	594.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.77	60,071	594.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.87	63,796	594.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.97	67,522	594.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.07	71,247	595.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.17	75,503	595.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.27	79,759	595.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.37	84,015	595.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.47	88,270	595.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.57	92,526	595.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000

Continues on next page...

Pond Update

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.67	96,782	595.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.77	101,038	595.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.87	105,294	595.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.97	109,550	595.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.07	113,806	596.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.17	118,808	596.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.27	123,811	596.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.37	128,813	596.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.47	133,815	596.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.57	138,818	596.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.67	143,820	596.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.77	148,823	596.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.87	153,825	596.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.97	158,828	596.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.07	163,830	597.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.14	168,945	597.07	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.20	174,059	597.13	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.27	179,174	597.20	0.00	---	---	---	---	---	0.27	---	---	---	0.274
4.34	184,289	597.27	0.00	---	---	---	---	---	1.53	---	---	---	1.534
4.40	189,404	597.34	0.00	---	---	---	---	---	3.35	---	---	---	3.351
4.47	194,518	597.40	0.00	---	---	---	---	---	5.59	---	---	---	5.586
4.54	199,633	597.47	0.00	---	---	---	---	---	8.17	---	---	---	8.172
4.61	204,748	597.54	0.00	---	---	---	---	---	11.07	---	---	---	11.07
4.67	209,863	597.60	0.00	---	---	---	---	---	14.24	---	---	---	14.24
4.74	214,977	597.67	0.00	---	---	---	---	---	17.66	---	---	---	17.66

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

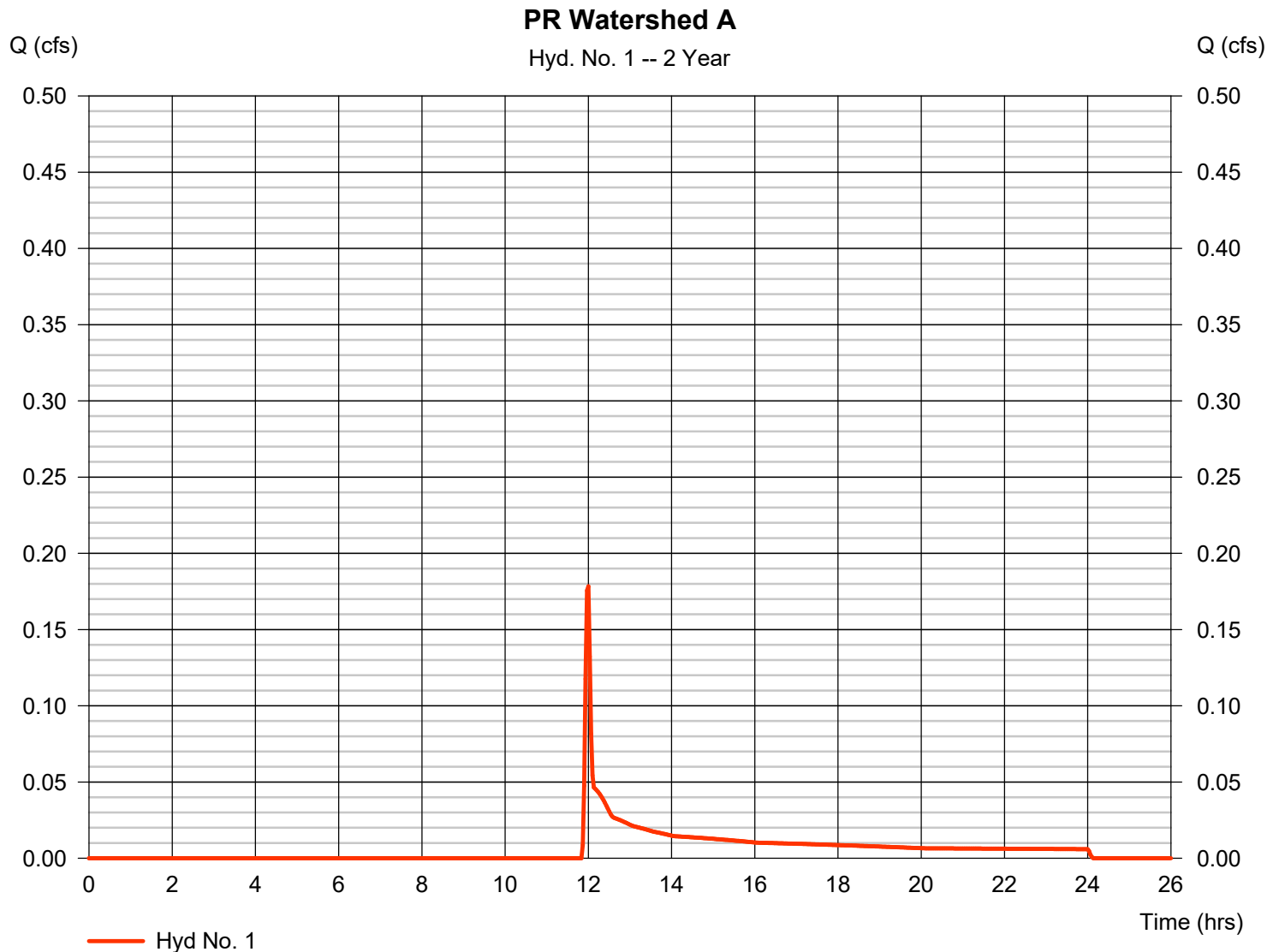
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 567 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

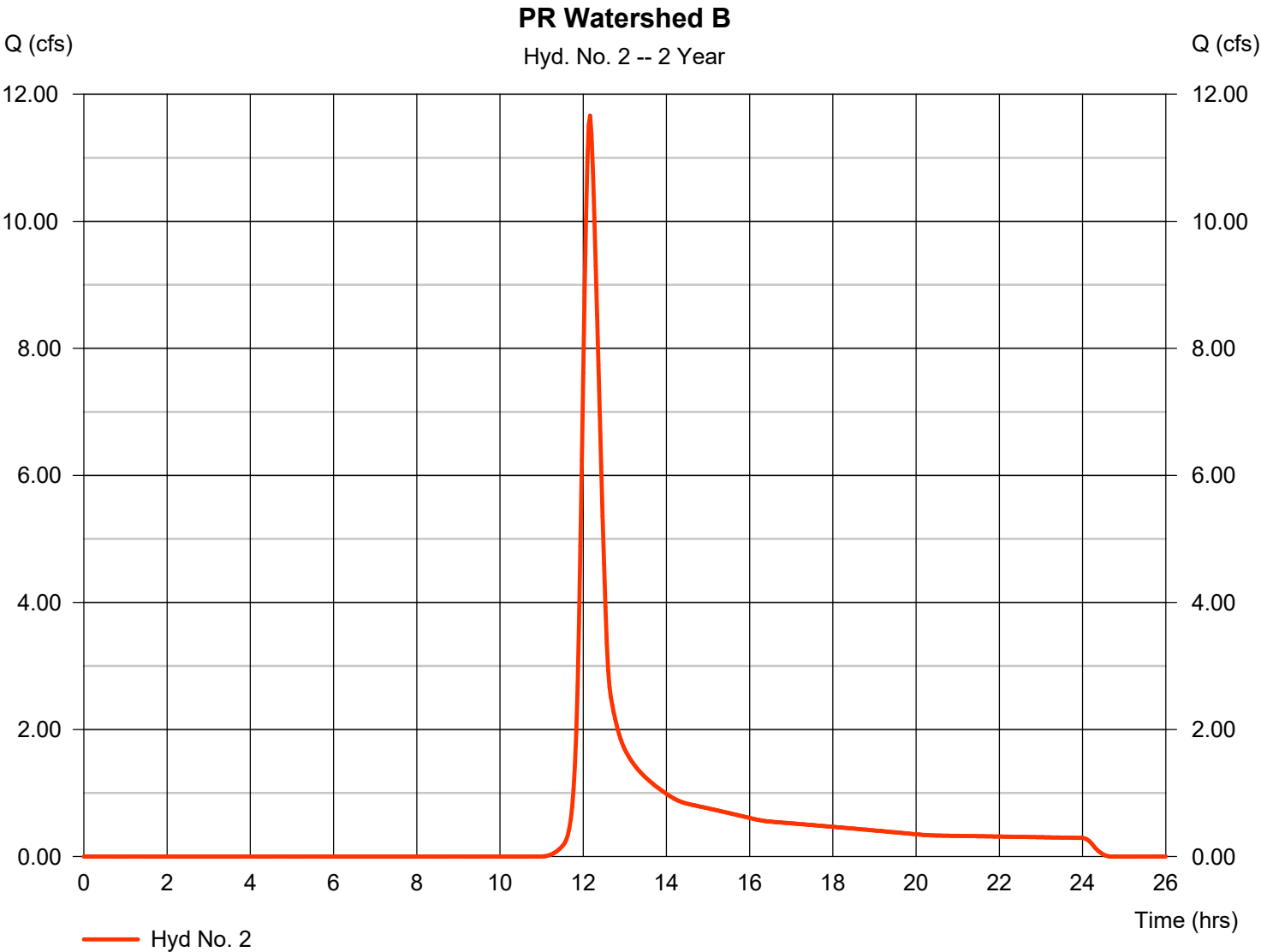
Tuesday, 05 / 25 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.66 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.17 hrs
Time interval	=	2 min	Hyd. volume	=	45,856 cuft
Drainage area	=	18.650 ac	Curve number	=	80*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.60 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.900 x 98) + (0.140 x 98) + (5.640 x 85) + (6.970 x 61)] / 18.650



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

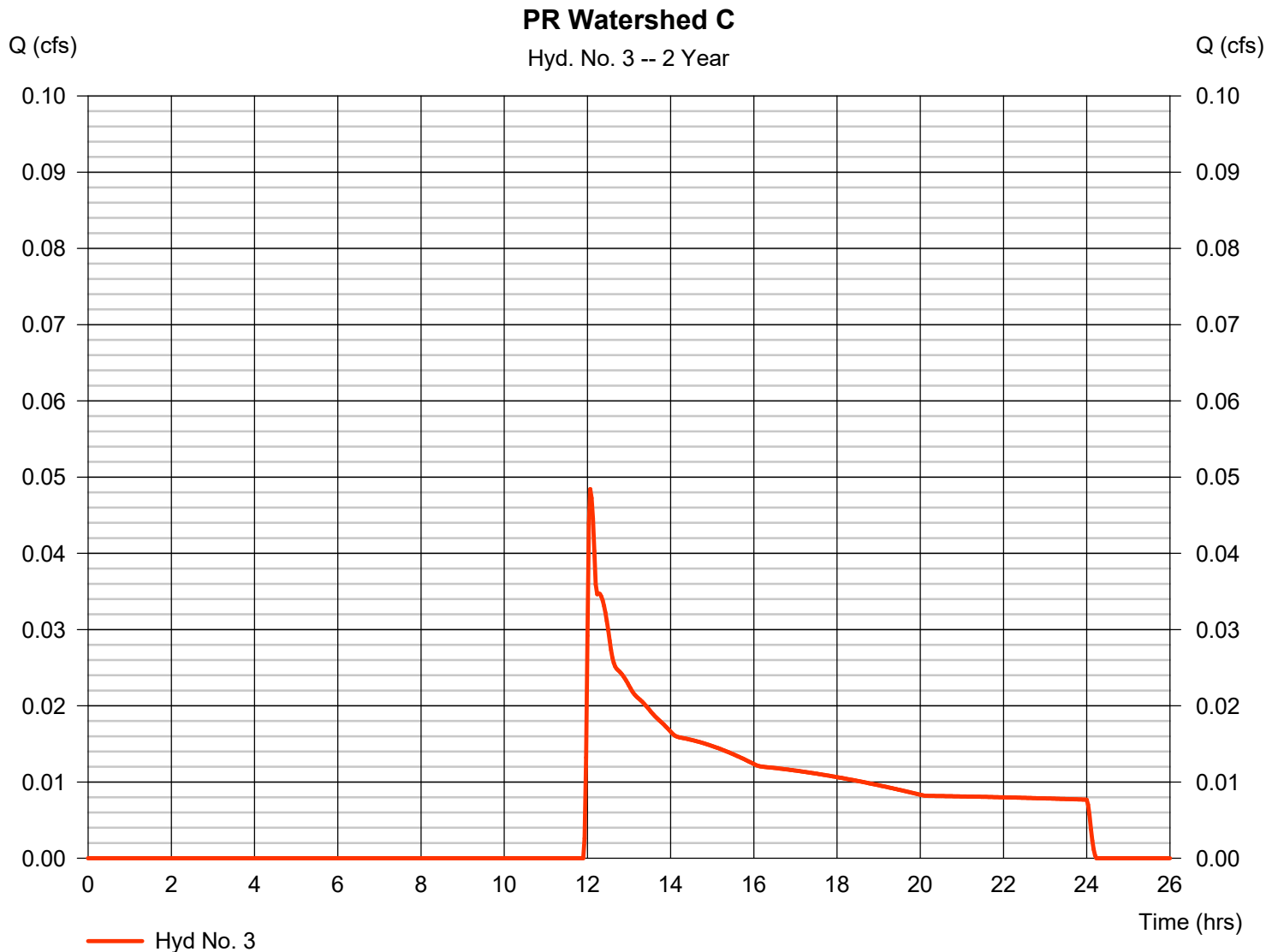
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.048 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 560 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

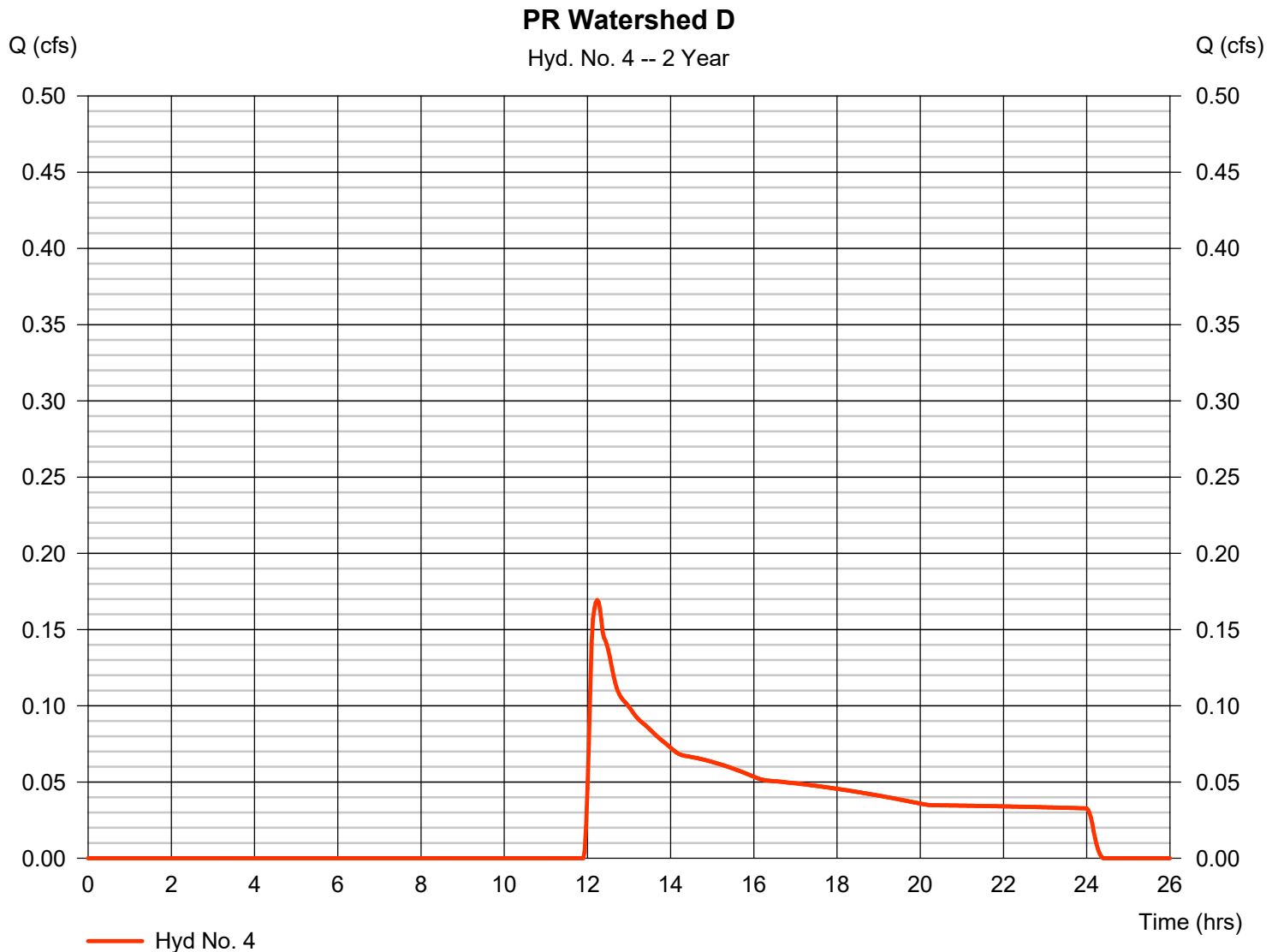
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

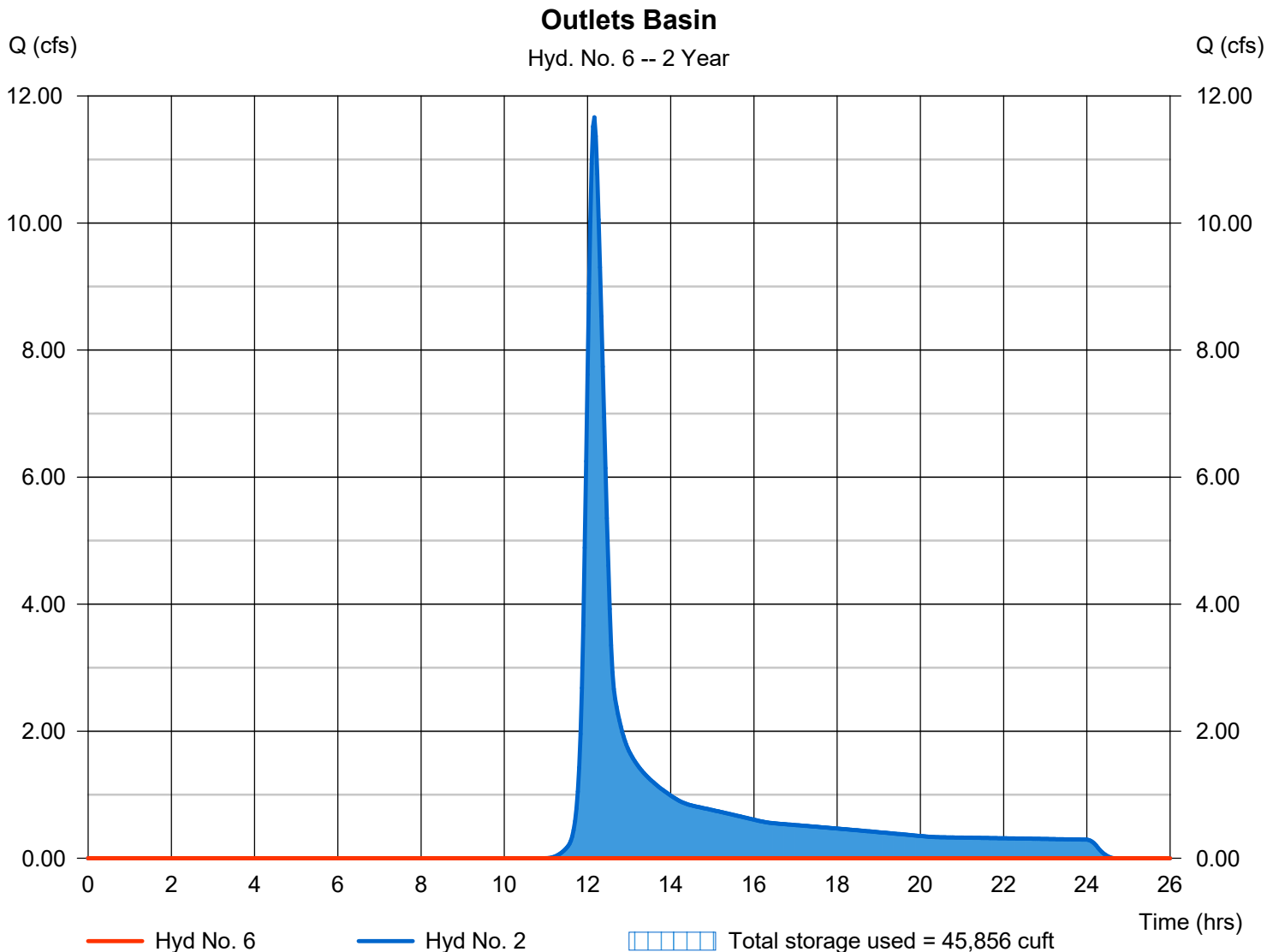
Hydrograph type	= SCS Runoff	Peak discharge	= 0.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 2,379 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 594.32 ft
Reservoir name	= Pond Update	Max. Storage	= 45,856 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

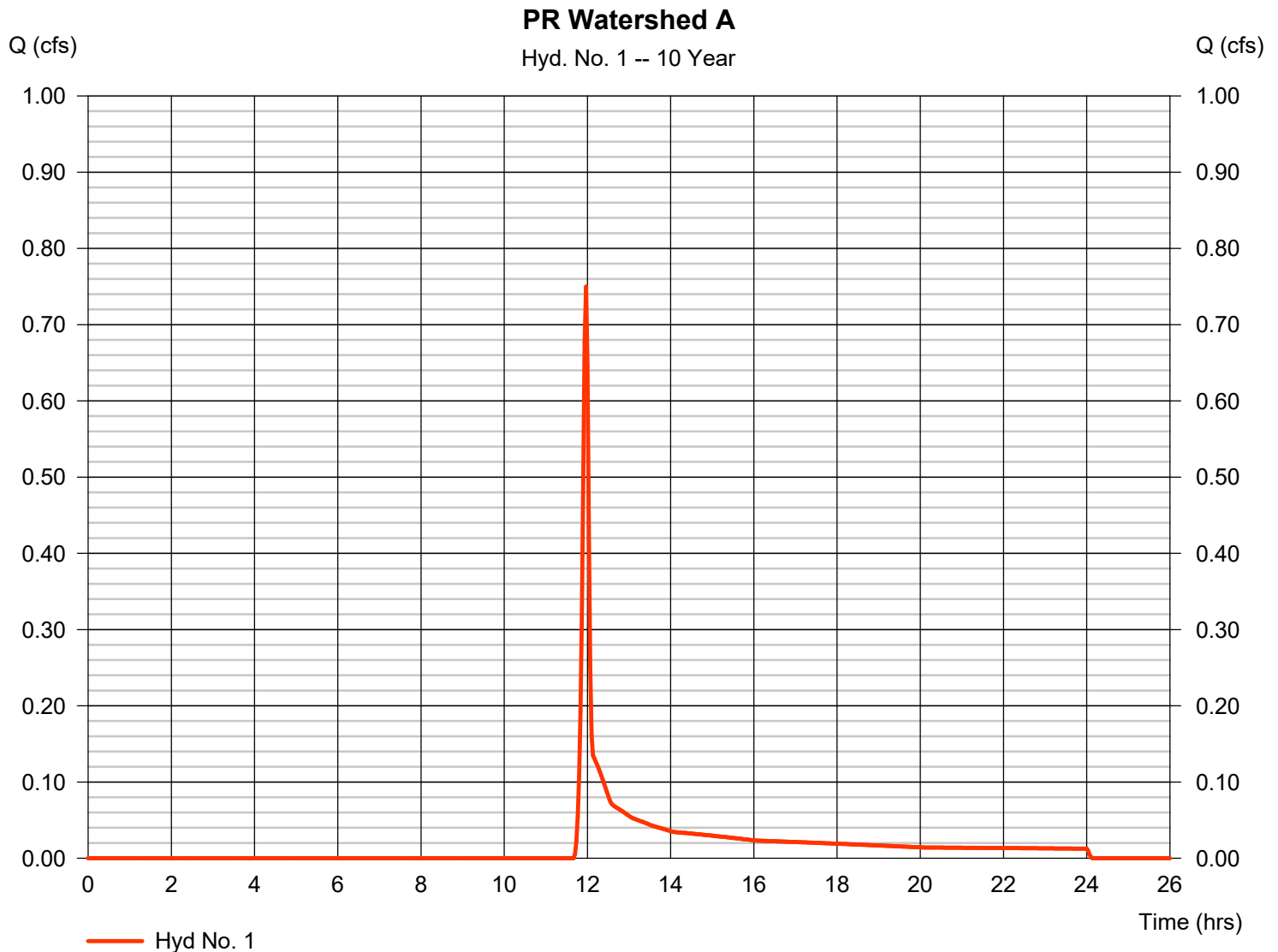
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.750 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,606 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

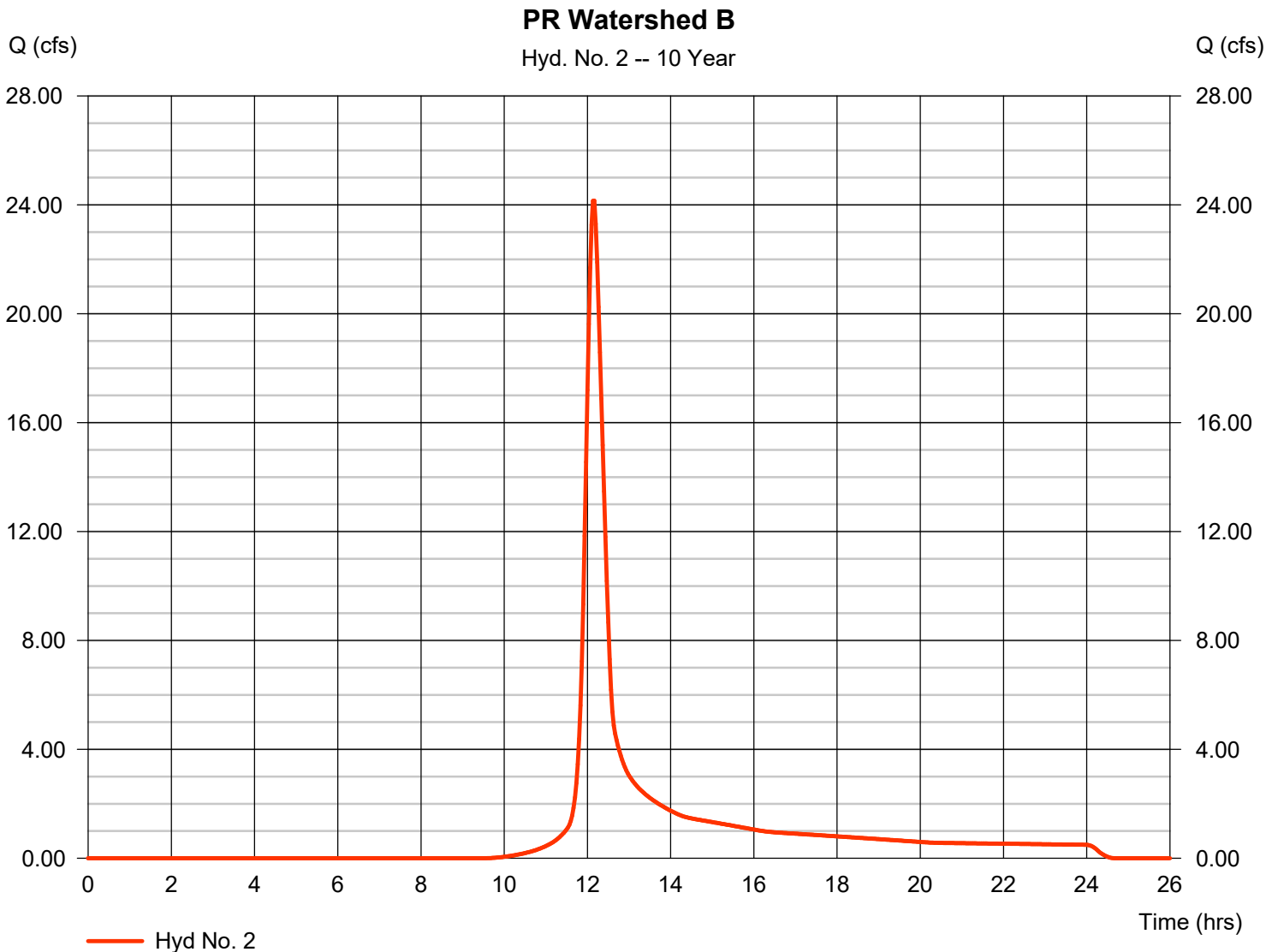
Tuesday, 05 / 25 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 24.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 90,363 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

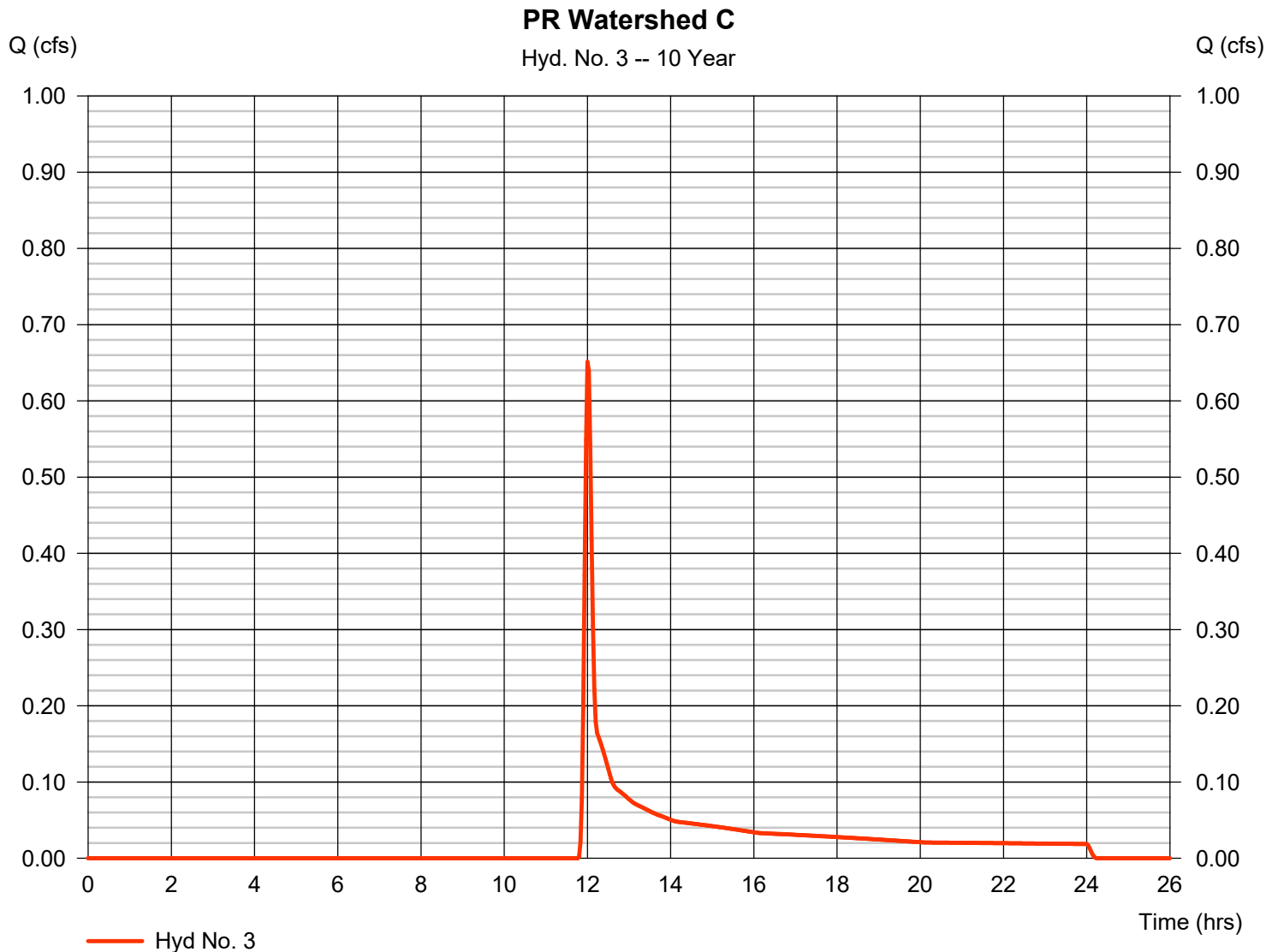
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.651 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,026 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

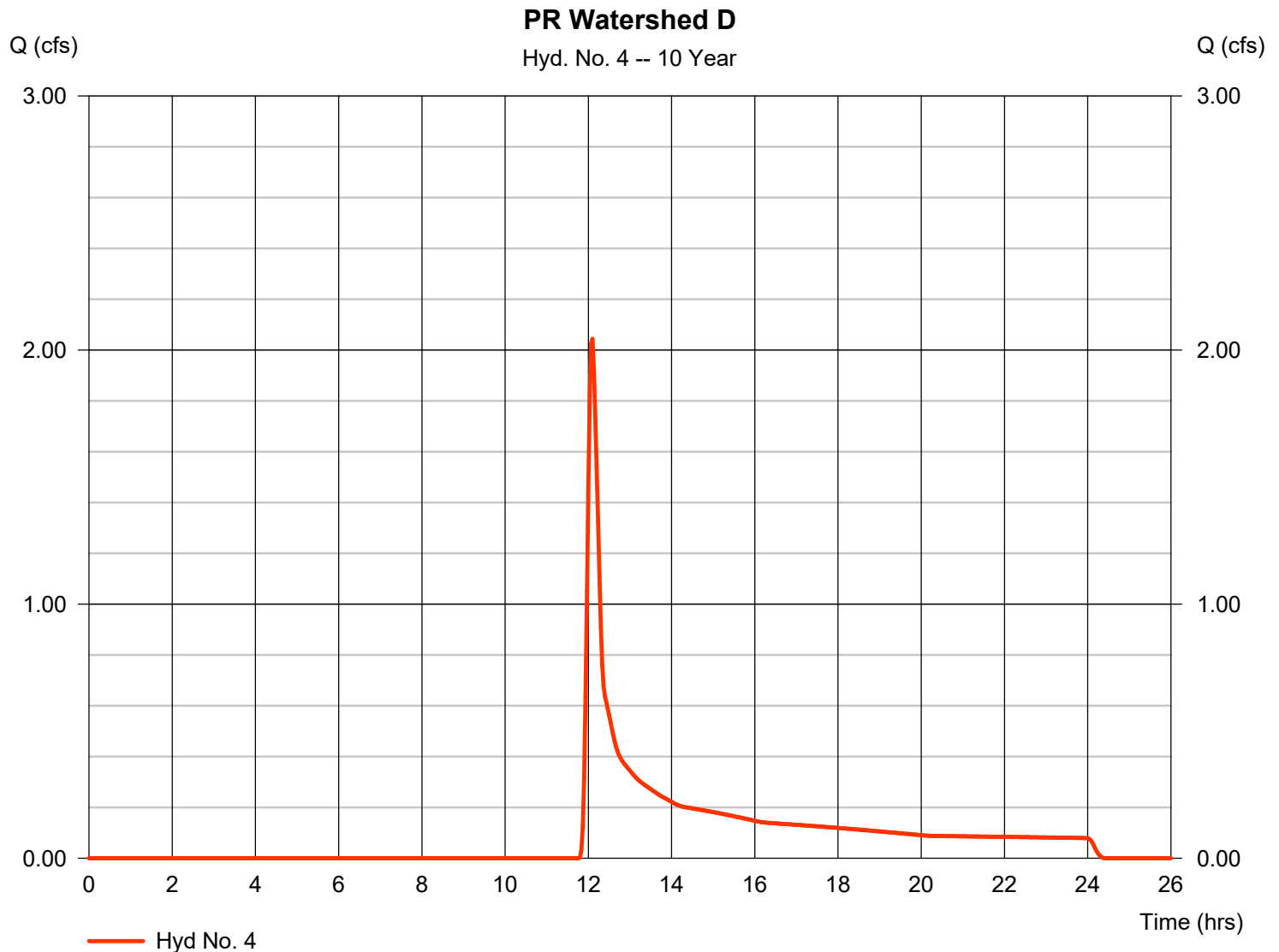
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.044 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 8,614 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

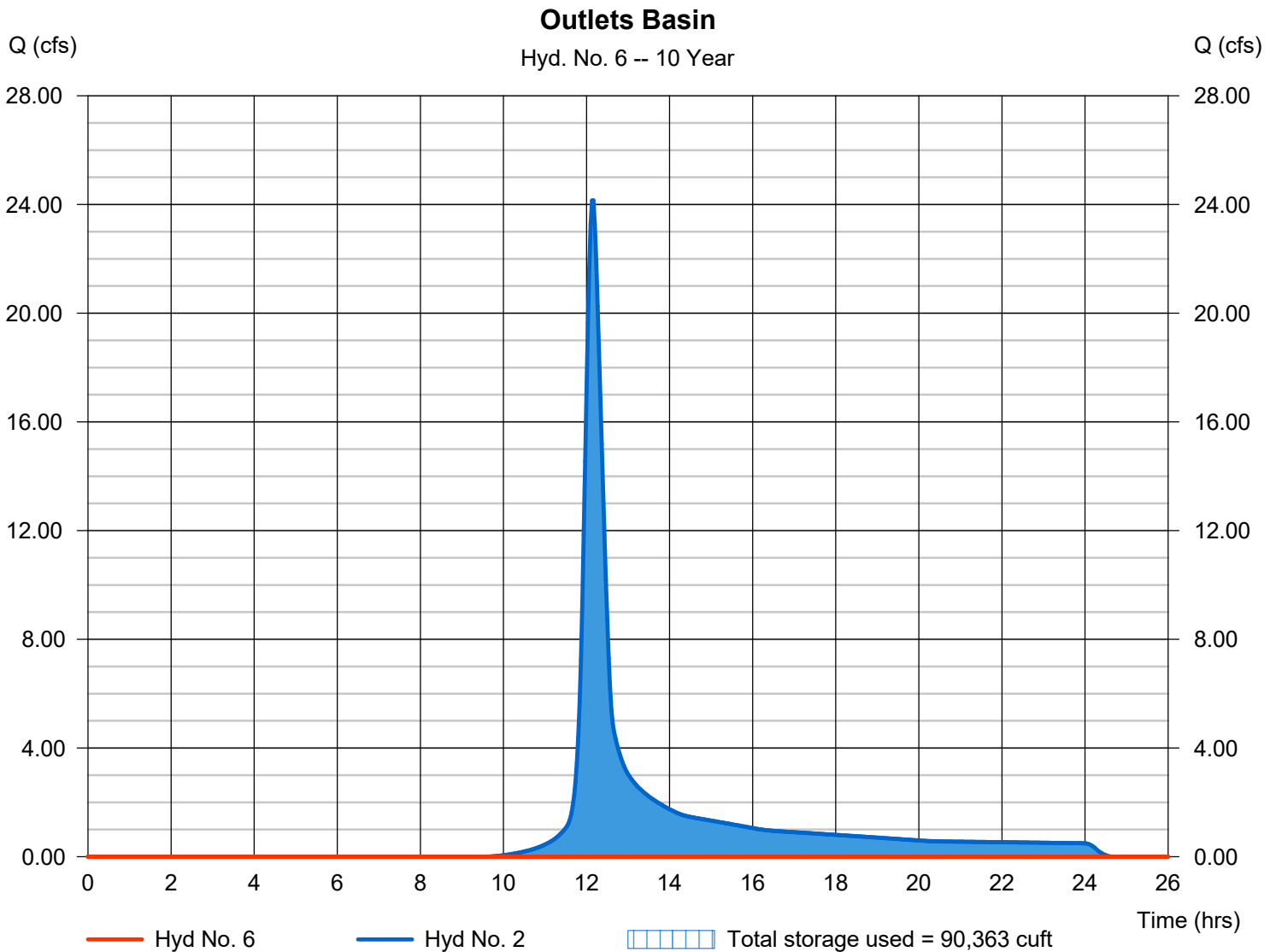
Tuesday, 05 / 25 / 2021

Hyd. No. 6

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 595.45 ft
Reservoir name	= Pond Update	Max. Storage	= 90,363 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

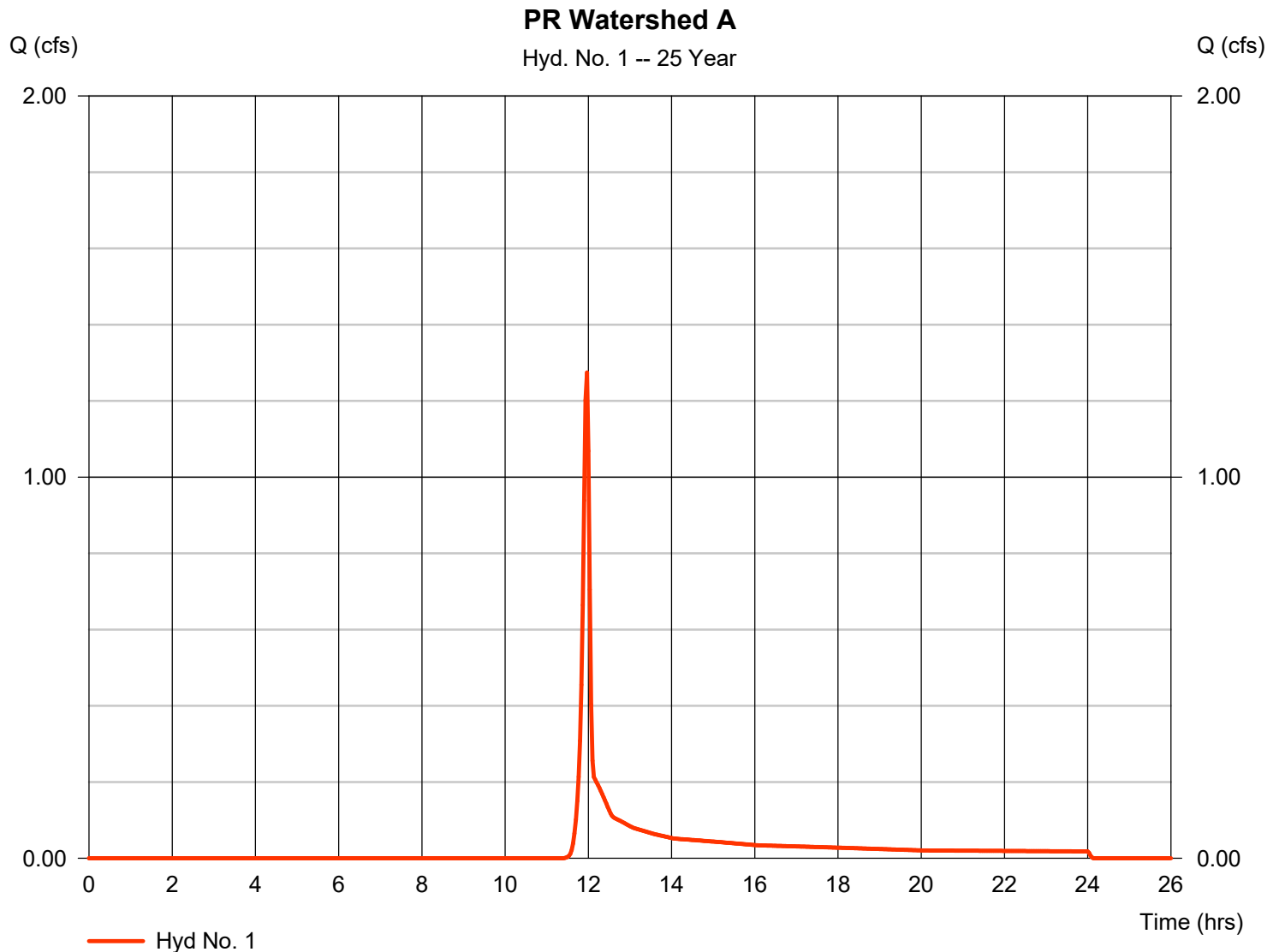
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.275 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,598 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

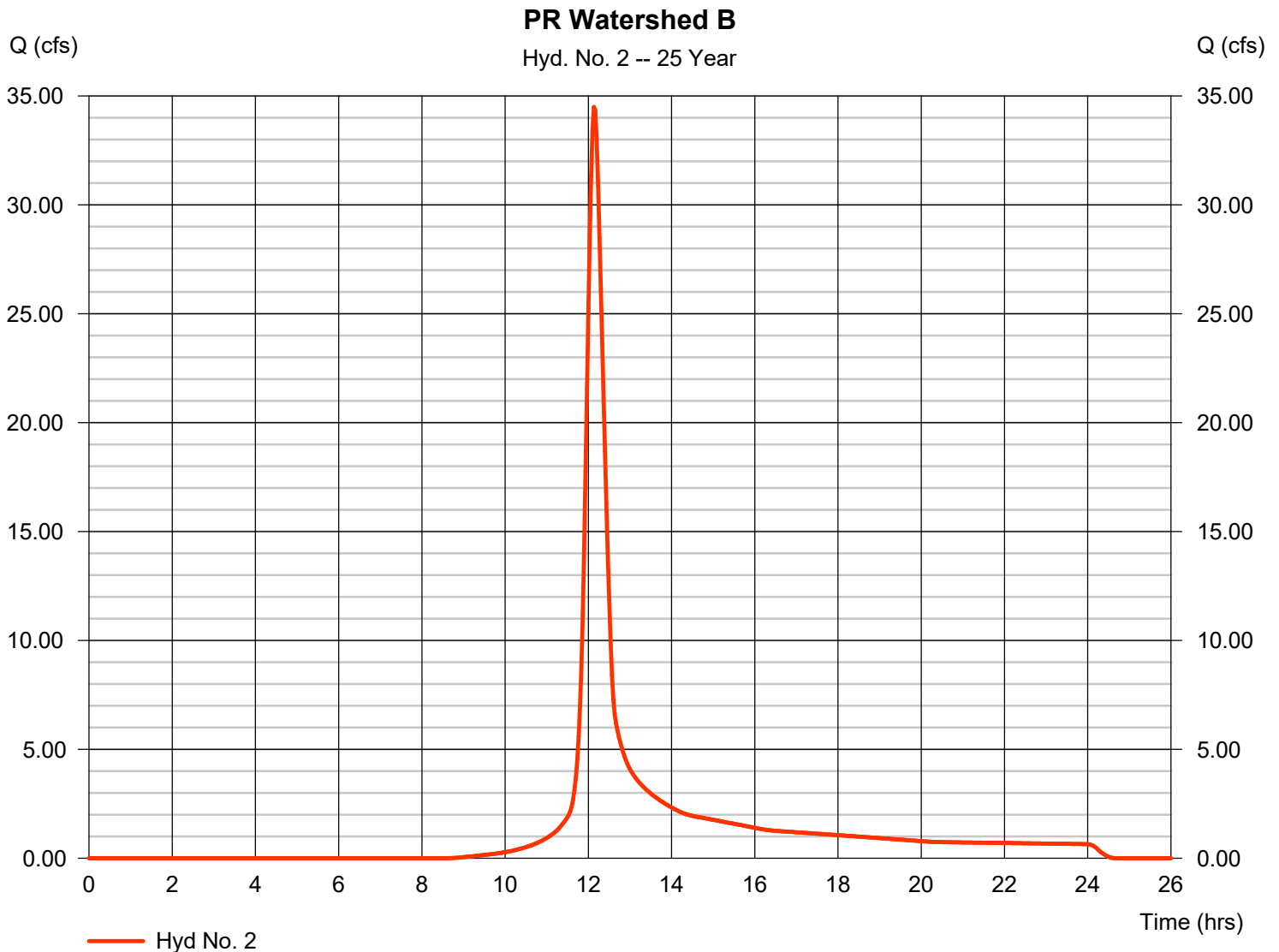
Hyd. No. 2

PR Watershed B

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 18.650 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.84 in
 Storm duration = 24 hrs

Peak discharge = 34.49 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 127,299 cuft
 Curve number = 80*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 23.60 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

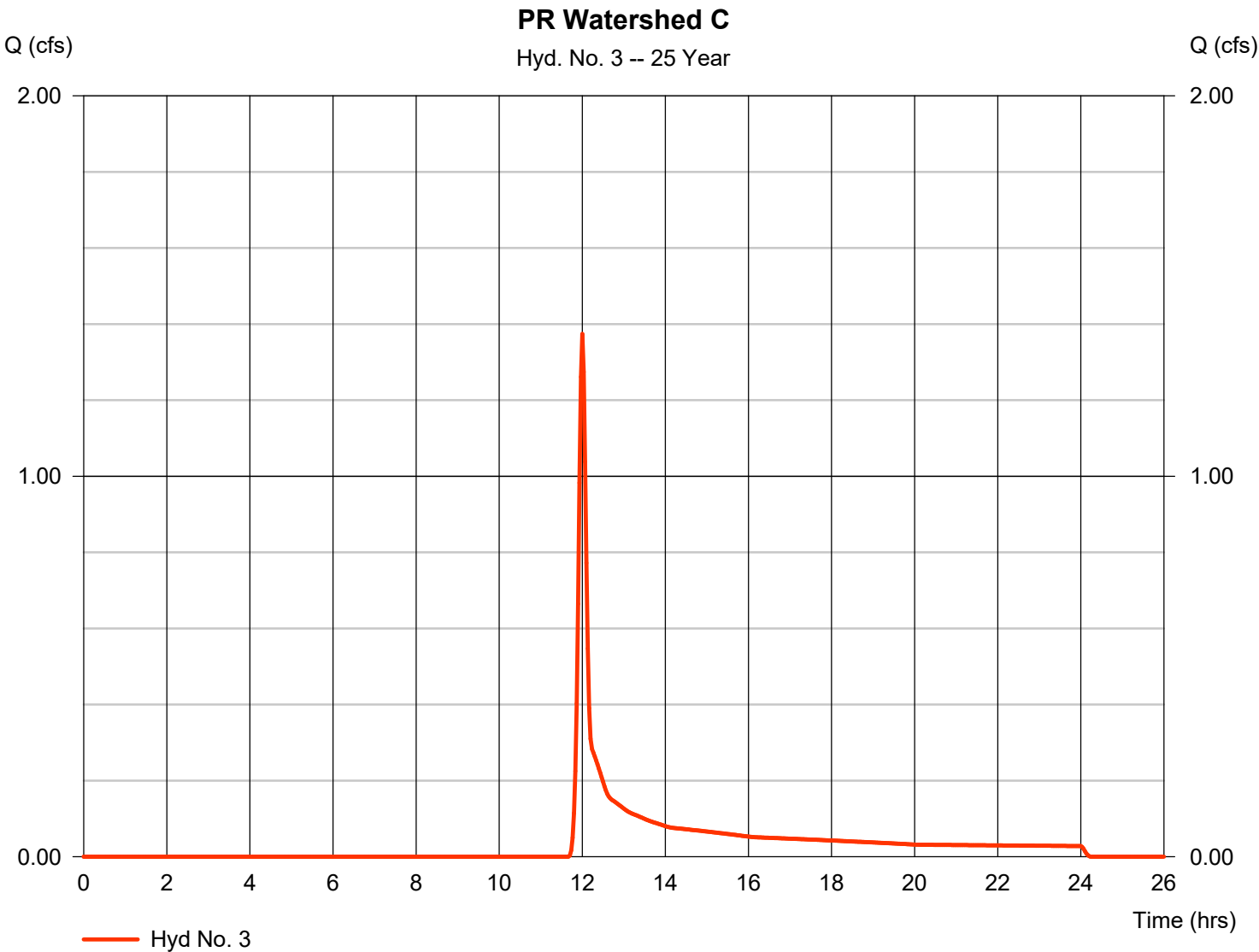
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.374 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 3,537 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.010 x 98) + (0.120 x 55) + (1.200 x 61)] / 1.330



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

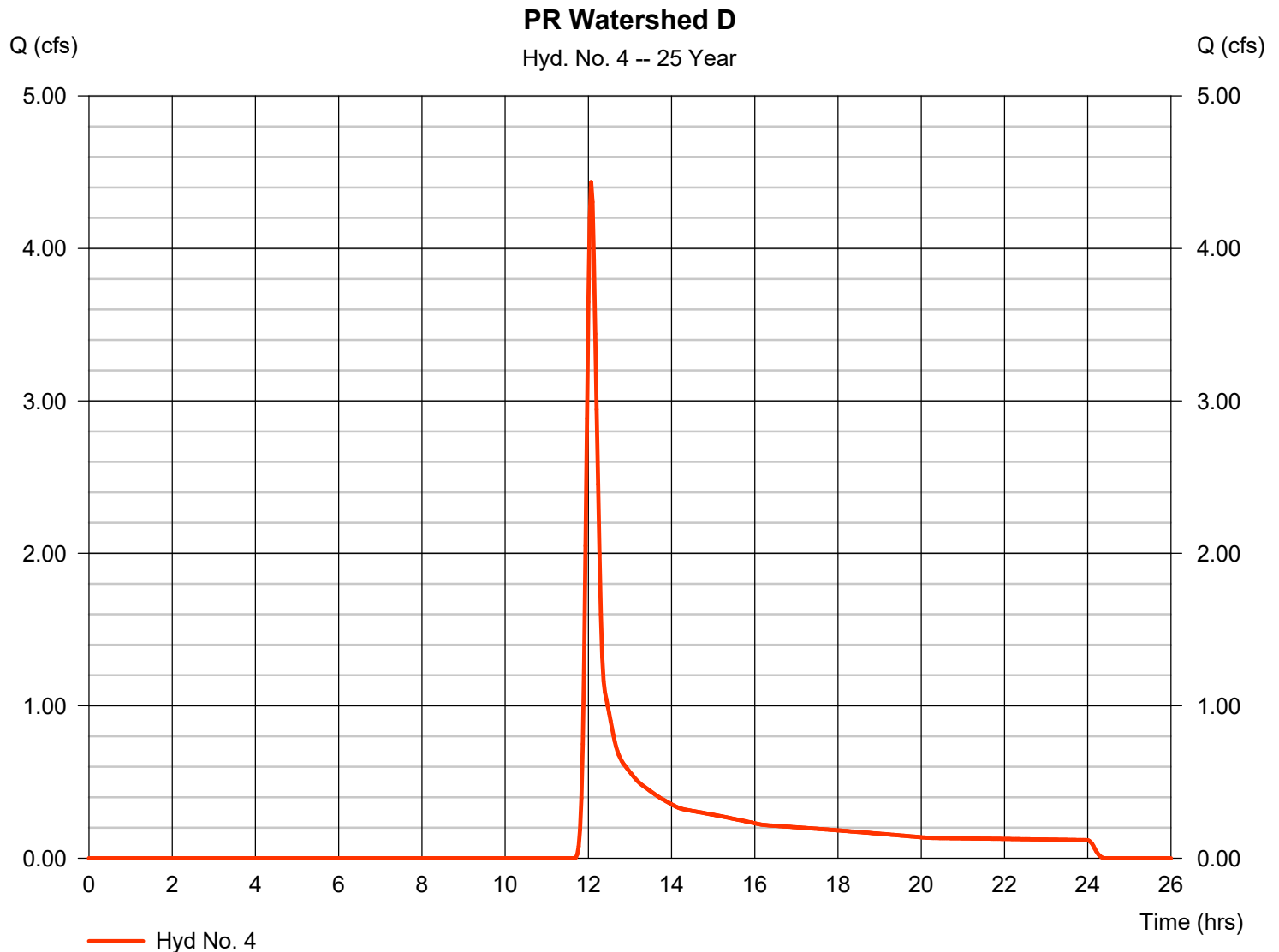
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.435 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 15,038 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 3.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

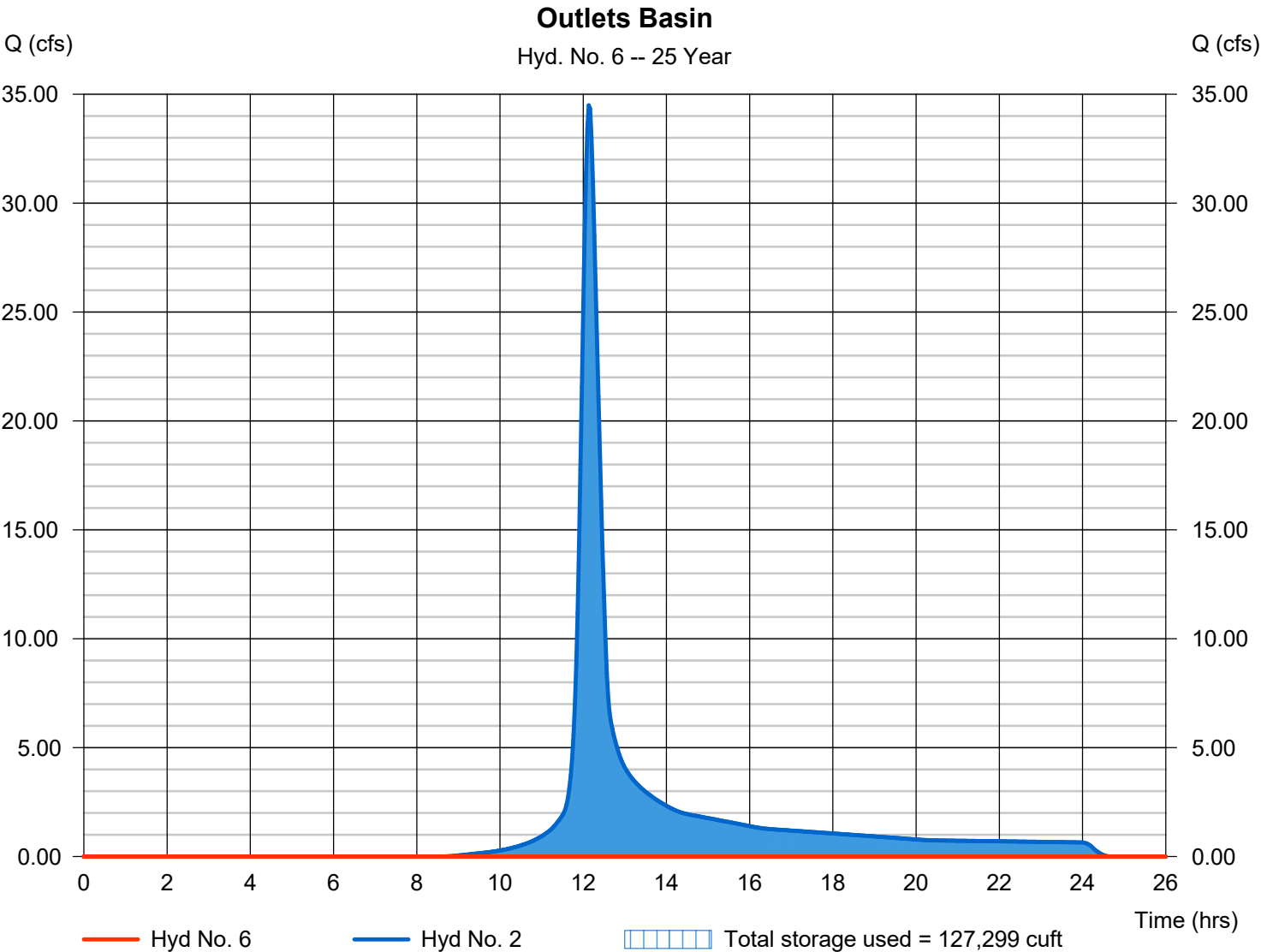
Tuesday, 05 / 25 / 2021

Hyd. No. 6

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 596.27 ft
Reservoir name	= Pond Update	Max. Storage	= 127,299 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

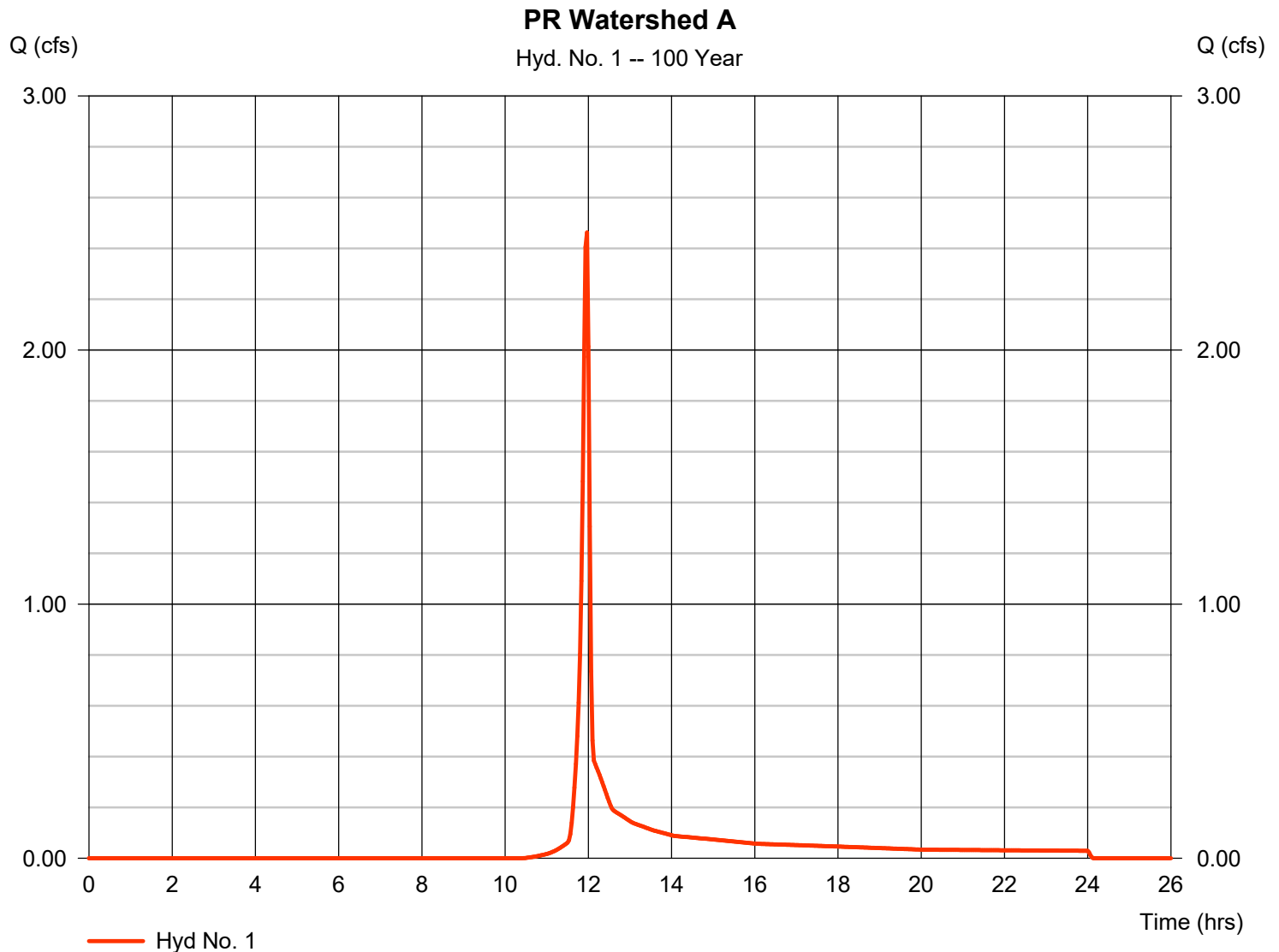
Tuesday, 05 / 25 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.462 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,924 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

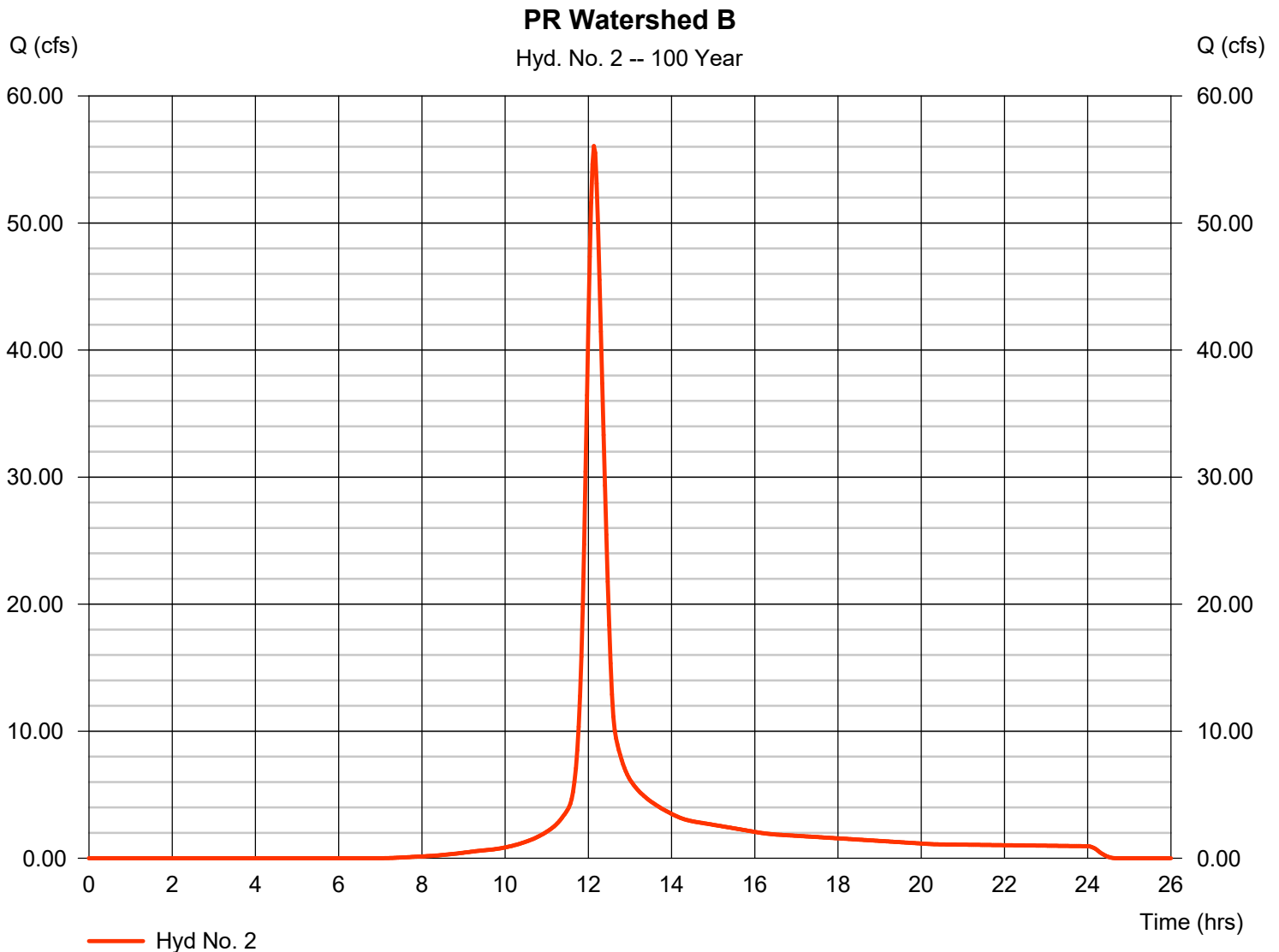
Hyd. No. 2

PR Watershed B

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 18.650 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.22 in
 Storm duration = 24 hrs

Peak discharge = 56.05 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 205,633 cuft
 Curve number = 80*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 23.60 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

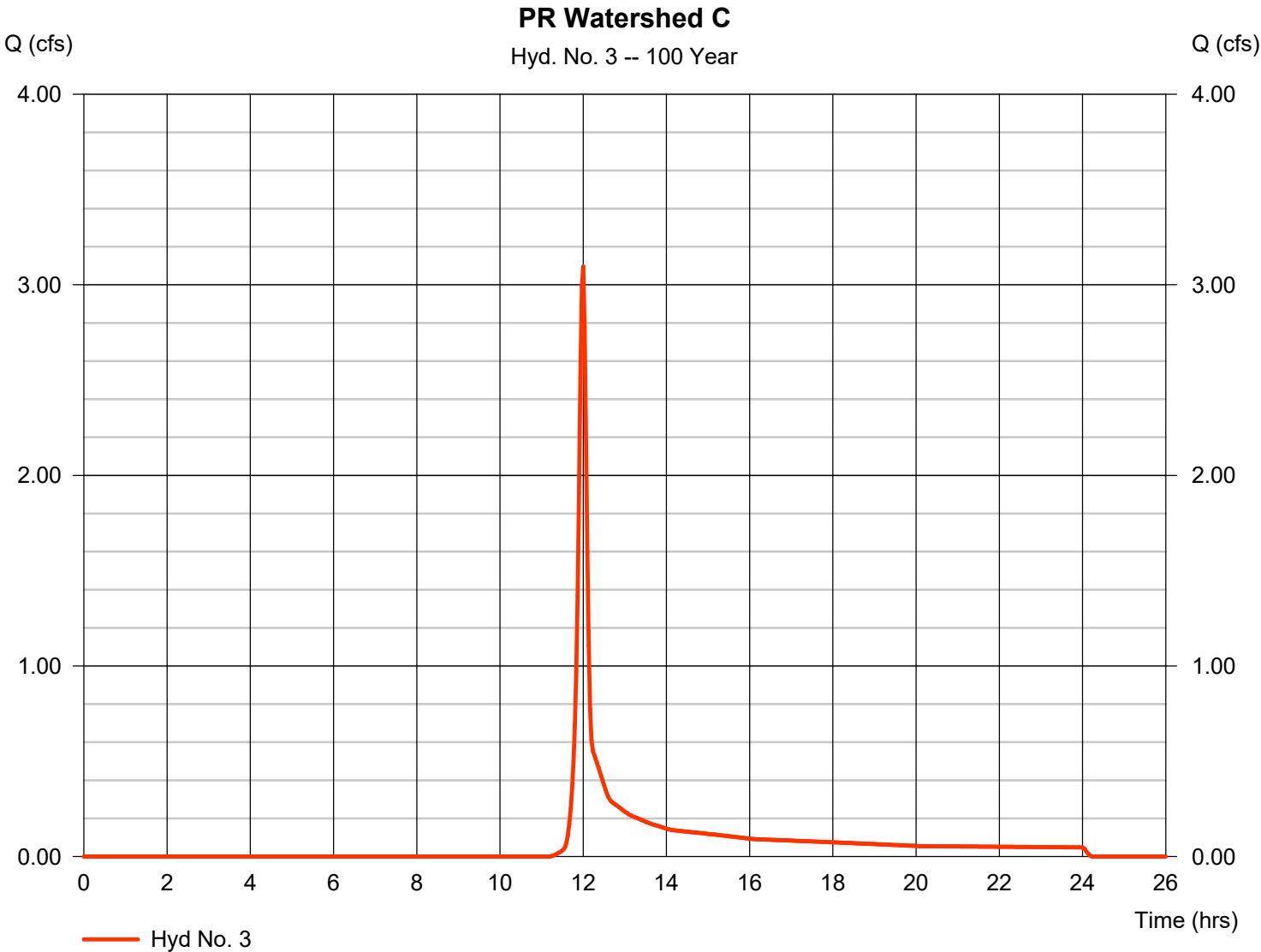
Tuesday, 05 / 25 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.096 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	7,257 cuft
Drainage area	=	1.330 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	8.50 min
Total precip.	=	5.22 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.010 x 98) + (0.120 x 55) + (1.200 x 61)] / 1.330



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

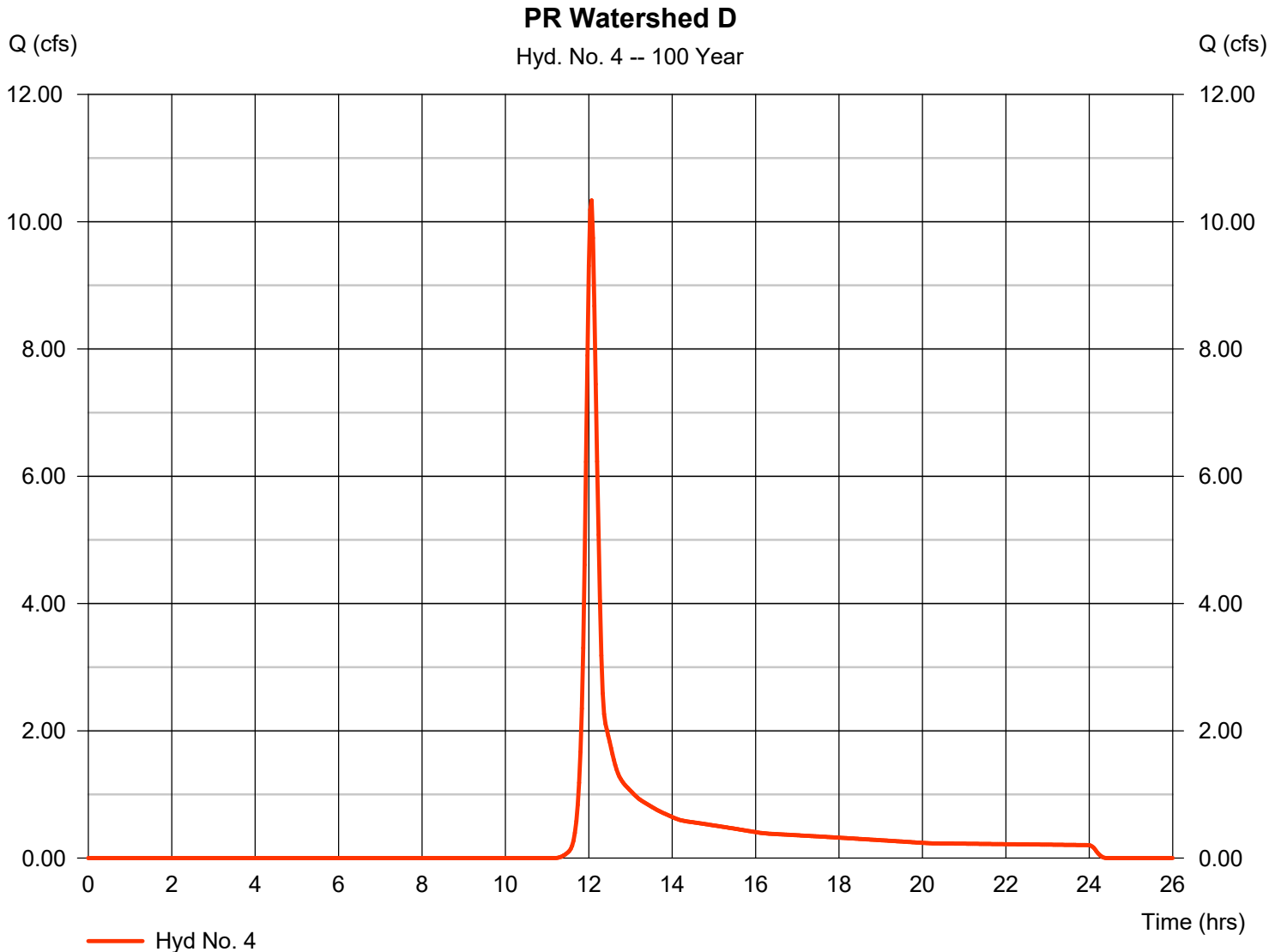
Tuesday, 05 / 25 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 10.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 30,855 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 5.22 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

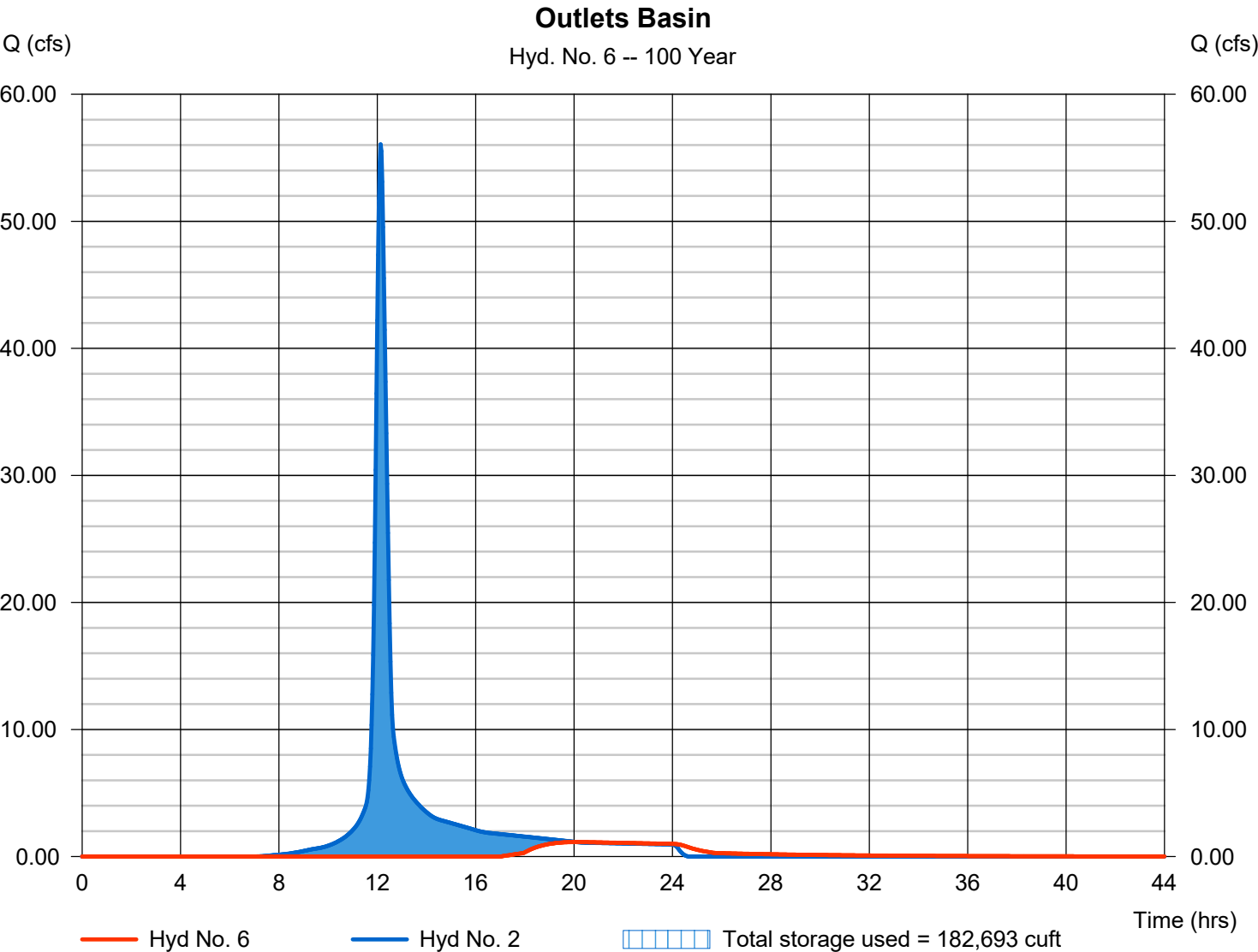
Tuesday, 05 / 25 / 2021

Hyd. No. 6

Outlets Basin

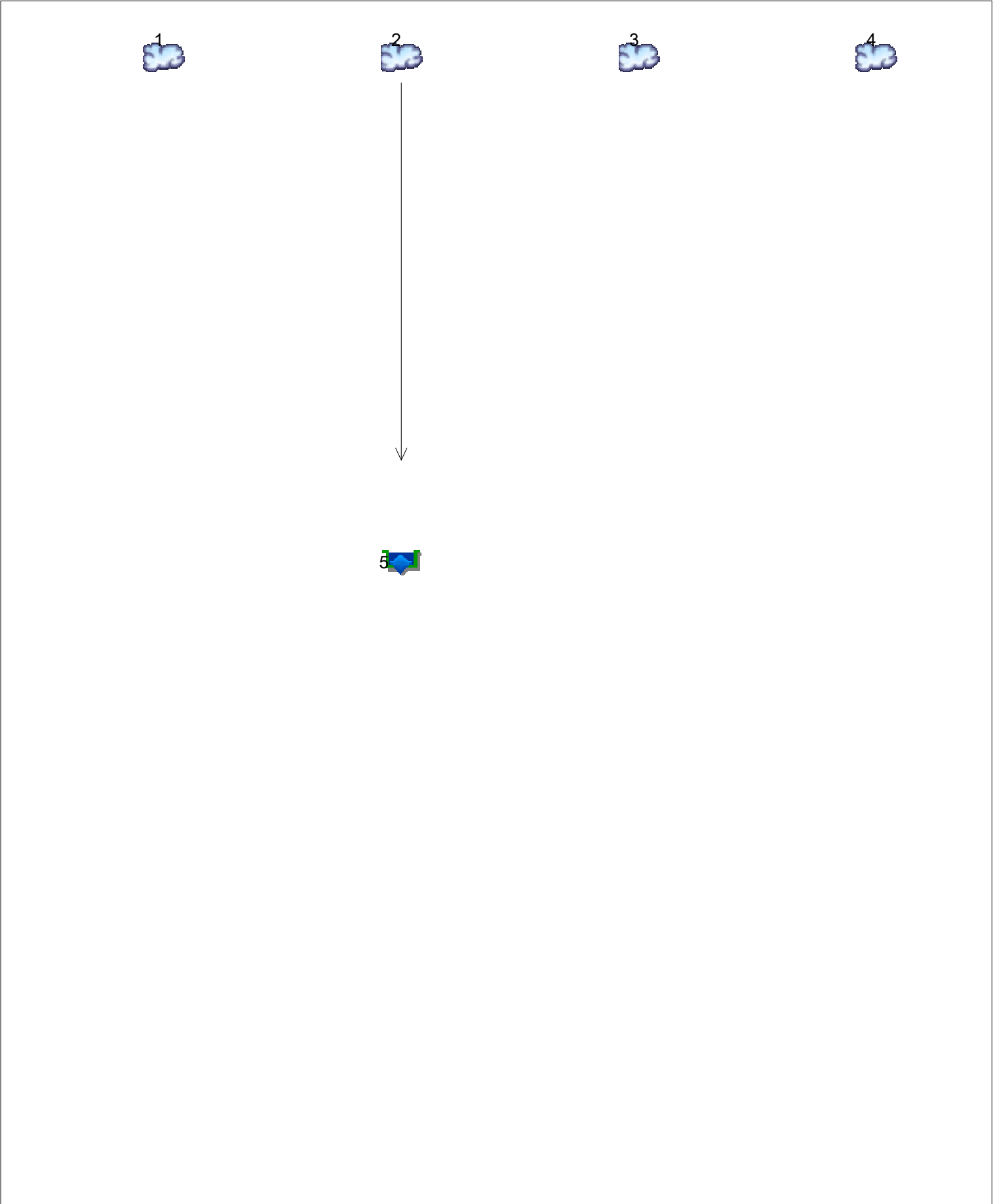
Hydrograph type	= Reservoir	Peak discharge	= 1.141 cfs
Storm frequency	= 100 yrs	Time to peak	= 20.07 hrs
Time interval	= 2 min	Hyd. volume	= 31,555 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 597.25 ft
Reservoir name	= Pond Update	Max. Storage	= 182,693 cuft

Storage Indication method used.



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

[illegible]

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

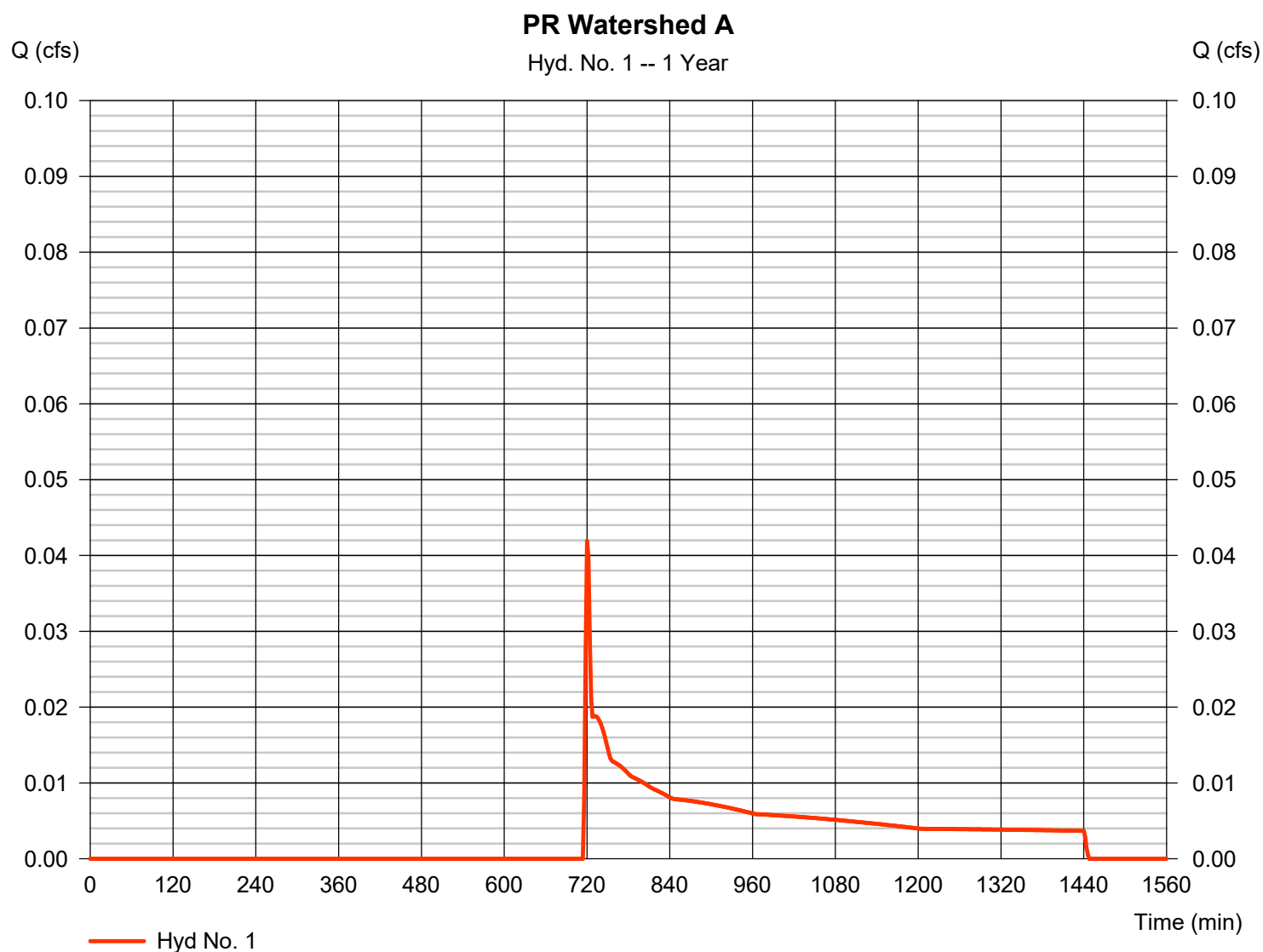
Monday, 04 / 26 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 282 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



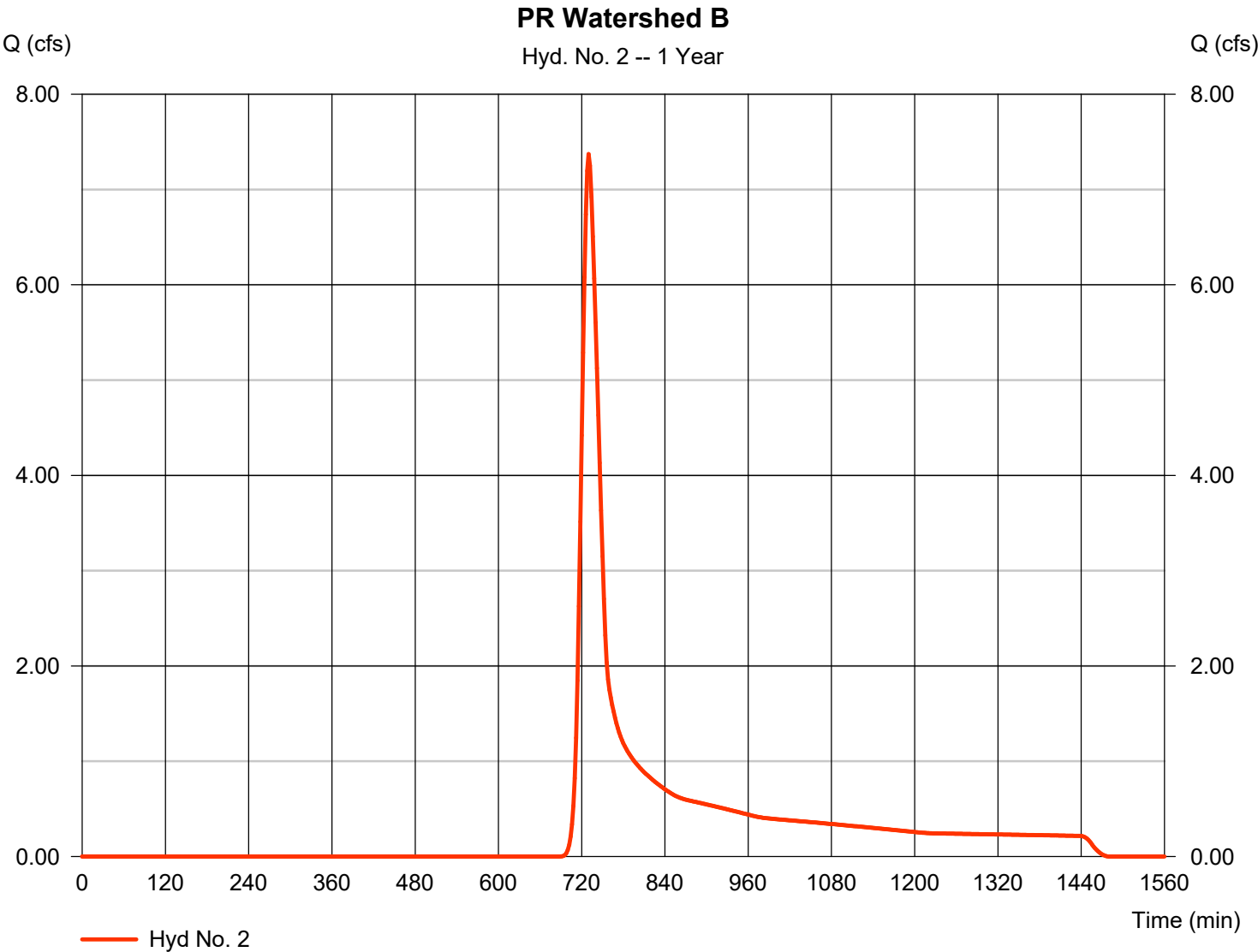
Hydrograph Report

Hyd. No. 2

PR Watershed B

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.371 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	30,778 cuft
Drainage area	=	18.650 ac	Curve number	=	80*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.60 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.900 x 98) + (0.140 x 98) + (5.640 x 85) + (6.970 x 61)] / 18.650



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 2

PR Watershed B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00	
Land slope (%)	= 1.06	0.00	0.00	
Travel Time (min)	= 22.19	+	0.00	+
			0.00	= 22.19
Shallow Concentrated Flow				
Flow length (ft)	= 132.00	83.00	0.00	
Watercourse slope (%)	= 1.51	6.02	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=1.98	3.96	0.00	
Travel Time (min)	= 1.11	+	0.35	+
			0.00	= 1.46
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	(0)0.0	0.0	0.0	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Total Travel Time, Tc				23.60 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

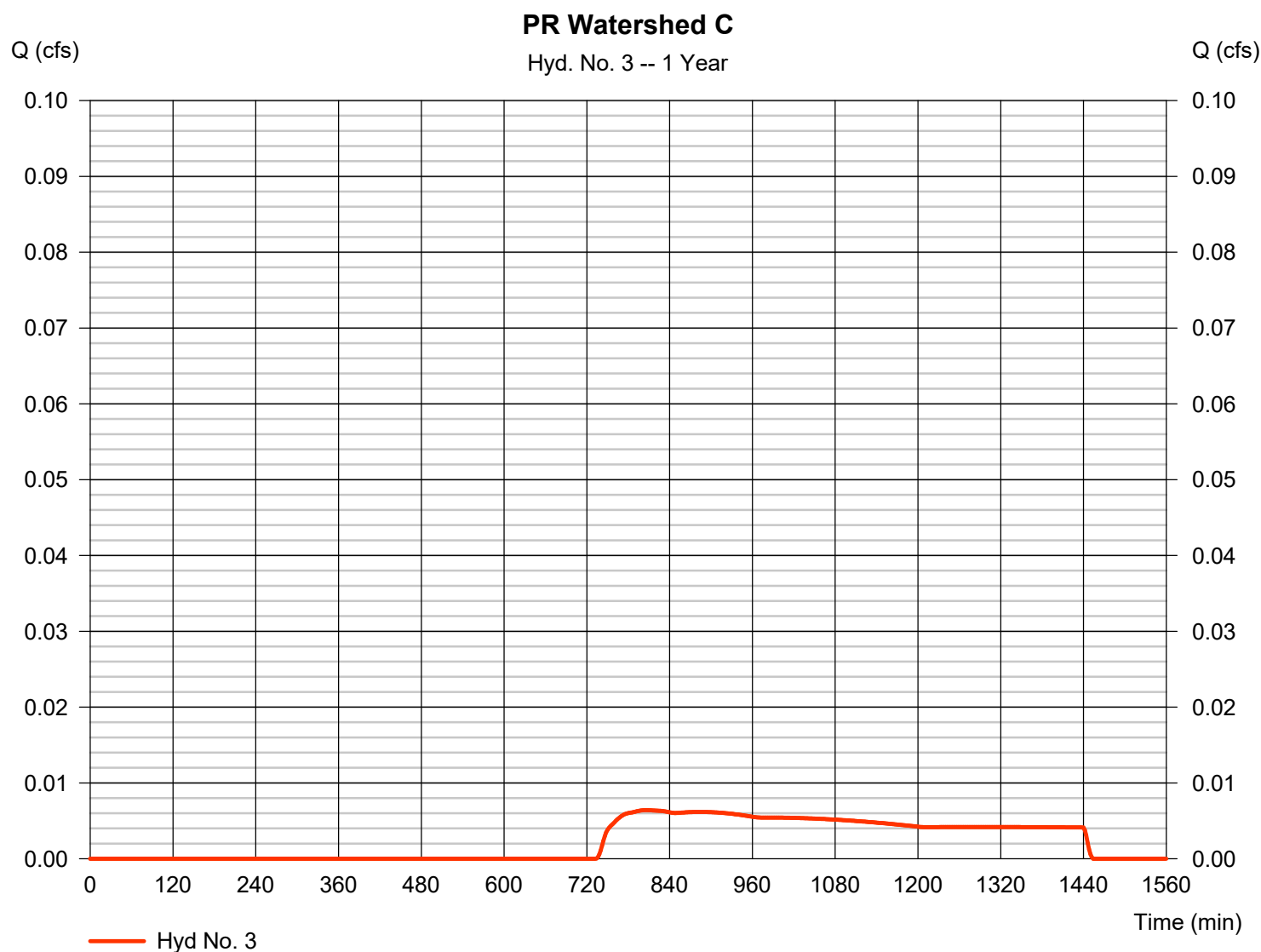
Monday, 04 / 26 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.006 cfs
Storm frequency	= 1 yrs	Time to peak	= 806 min
Time interval	= 2 min	Hyd. volume	= 211 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 1.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 3

PR Watershed C

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 7.00	0.00	0.00				
Travel Time (min)	= 7.16	+	0.00	+	0.00	=	7.16
Shallow Concentrated Flow							
Flow length (ft)	= 190.00	0.00	0.00				
Watercourse slope (%)	= 2.10	0.00	0.00				
Surface description	= Unpaved	Paved	Paved				
Average velocity (ft/s)	=2.34	0.00	0.00				
Travel Time (min)	= 1.35	+	0.00	+	0.00	=	1.35
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	((0})0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				8.50 min			

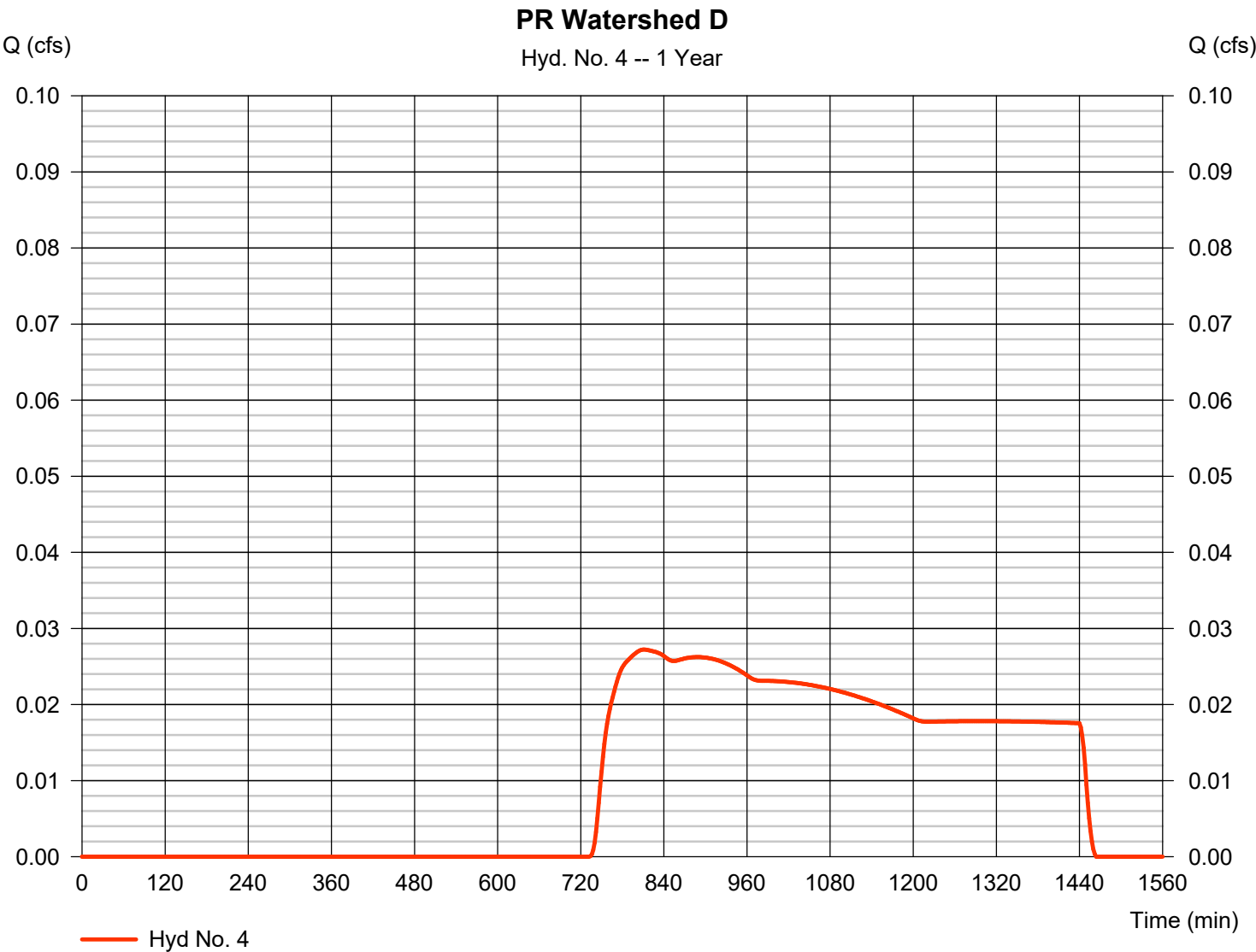
Hydrograph Report

Hyd. No. 4

PR Watershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.027 cfs
Storm frequency	=	1 yrs	Time to peak	=	812 min
Time interval	=	2 min	Hyd. volume	=	898 cuft
Drainage area	=	5.800 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.70 min
Total precip.	=	1.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 98) + (0.250 x 55) + (5.450 x 61)] / 5.800



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 4

PR Watershed D

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 100.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.20	0.00	0.00				
Land slope (%)	= 1.67	0.00	0.00				
Travel Time (min)	= 12.70	+	0.00	+	0.00	=	12.70
Shallow Concentrated Flow							
Flow length (ft)	= 206.00	119.00	0.00				
Watercourse slope (%)	= 1.61	0.84	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.05	1.48	0.00				
Travel Time (min)	= 1.68	+	1.34	+	0.00	=	3.02
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	((0})0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				15.70 min			

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

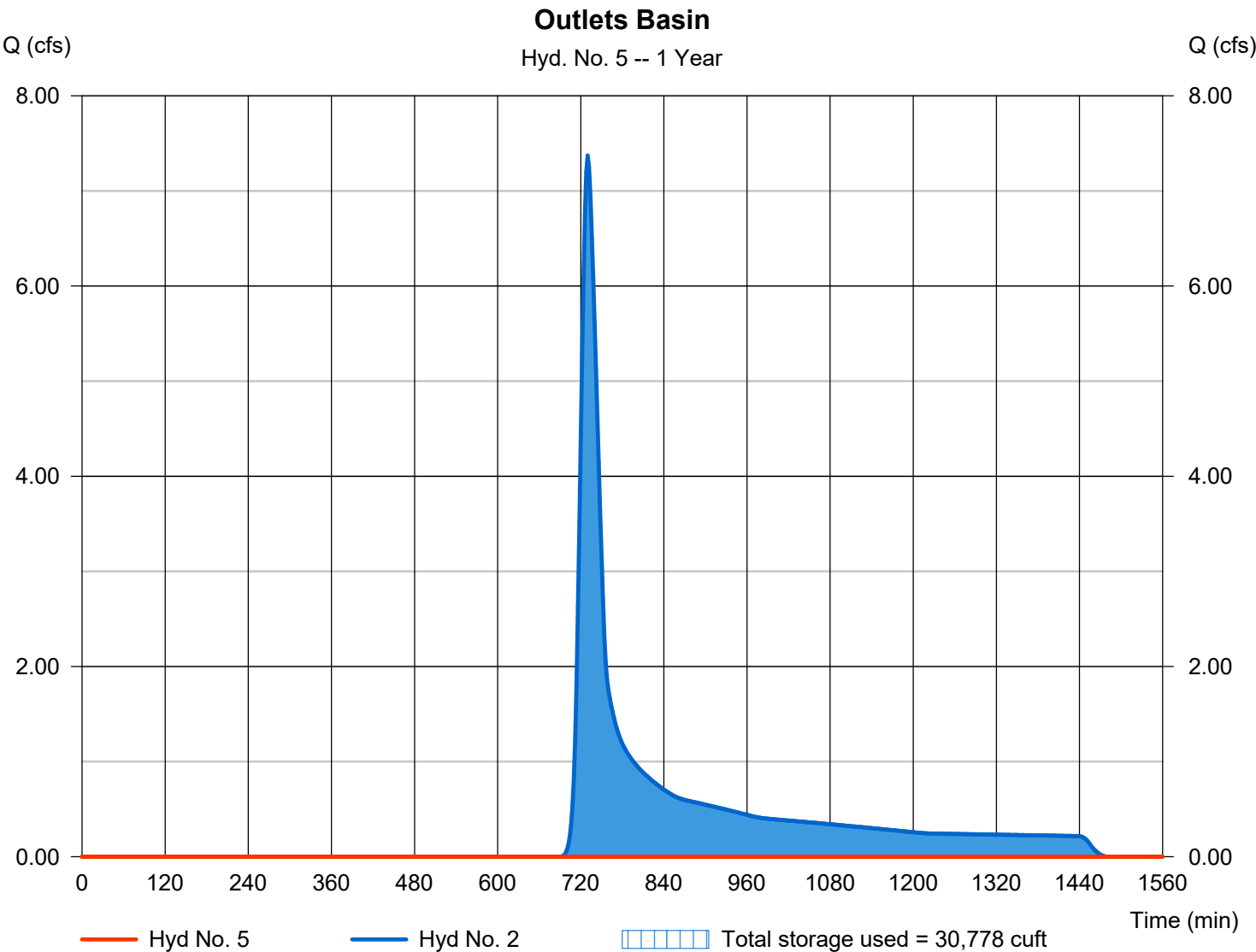
Monday, 04 / 26 / 2021

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 591.18 ft
Reservoir name	= Pond - Full	Max. Storage	= 30,778 cuft

Storage Indication method used.



Pond Report

11

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Monday, 04 / 26 / 2021

Pond No. 6 - Pond - Full

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 588.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	588.50	3,720	0	0
0.50	589.00	7,487	2,802	2,802
1.50	590.00	12,132	9,810	12,611
2.50	591.00	17,325	14,729	27,340
3.50	592.00	21,215	19,270	46,610
4.50	593.00	25,645	23,430	70,040
5.50	594.00	34,991	30,318	100,358
6.50	595.00	39,515	37,253	137,611
7.50	596.00	45,603	42,559	180,170
8.50	597.00	54,445	50,024	230,194
8.83	597.33	64,652	19,652	249,846

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 592.93	0.00	0.00	0.00
Length (ft)	= 220.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	15.00	0.00
Crest El. (ft)	= 0.00	0.00	597.17	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	Ciphti	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	588.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.05	280	588.55	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.10	560	588.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.15	841	588.65	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.20	1,121	588.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.25	1,401	588.75	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.30	1,681	588.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.35	1,961	588.85	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.40	2,241	588.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.45	2,522	588.95	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.50	2,802	589.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.60	3,783	589.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.70	4,764	589.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.80	5,745	589.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
0.90	6,726	589.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.00	7,707	589.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.10	8,687	589.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.20	9,668	589.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.30	10,649	589.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.40	11,630	589.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.50	12,611	590.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.60	14,084	590.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.70	15,557	590.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.80	17,030	590.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
1.90	18,503	590.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.00	19,976	590.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.10	21,448	590.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.20	22,921	590.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.30	24,394	590.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.40	25,867	590.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.50	27,340	591.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.60	29,267	591.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000

Continues on next page...

Pond - Full

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.70	31,194	591.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.80	33,121	591.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
2.90	35,048	591.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.00	36,975	591.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.10	38,902	591.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.20	40,829	591.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.30	42,756	591.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.40	44,683	591.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.50	46,610	592.00	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.60	48,953	592.10	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.70	51,296	592.20	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.80	53,639	592.30	0.00	---	---	---	---	---	0.00	---	---	---	0.000
3.90	55,982	592.40	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.00	58,325	592.50	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.10	60,668	592.60	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.20	63,011	592.70	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.30	65,354	592.80	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.40	67,697	592.90	0.00	---	---	---	---	---	0.00	---	---	---	0.000
4.50	70,040	593.00	0.02 ic	---	---	---	---	---	0.00	---	---	---	0.025
4.60	73,072	593.10	0.14 ic	---	---	---	---	---	0.00	---	---	---	0.141
4.70	76,103	593.20	0.35 ic	---	---	---	---	---	0.00	---	---	---	0.346
4.80	79,135	593.30	0.63 ic	---	---	---	---	---	0.00	---	---	---	0.631
4.90	82,167	593.40	0.99 ic	---	---	---	---	---	0.00	---	---	---	0.986
5.00	85,199	593.50	1.40 ic	---	---	---	---	---	0.00	---	---	---	1.401
5.10	88,231	593.60	1.87 ic	---	---	---	---	---	0.00	---	---	---	1.867
5.20	91,262	593.70	2.37 ic	---	---	---	---	---	0.00	---	---	---	2.369
5.30	94,294	593.80	2.90 ic	---	---	---	---	---	0.00	---	---	---	2.897
5.40	97,326	593.90	3.43 ic	---	---	---	---	---	0.00	---	---	---	3.428
5.50	100,358	594.00	3.94 ic	---	---	---	---	---	0.00	---	---	---	3.940
5.60	104,083	594.10	4.40 ic	---	---	---	---	---	0.00	---	---	---	4.398
5.70	107,808	594.20	4.74 ic	---	---	---	---	---	0.00	---	---	---	4.745
5.80	111,534	594.30	5.10 ic	---	---	---	---	---	0.00	---	---	---	5.099
5.90	115,259	594.40	5.43 ic	---	---	---	---	---	0.00	---	---	---	5.431
6.00	118,984	594.50	5.74 ic	---	---	---	---	---	0.00	---	---	---	5.743
6.10	122,710	594.60	6.04 ic	---	---	---	---	---	0.00	---	---	---	6.039
6.20	126,435	594.70	6.32 ic	---	---	---	---	---	0.00	---	---	---	6.322
6.30	130,160	594.80	6.45 oc	---	---	---	---	---	0.00	---	---	---	6.453
6.40	133,885	594.90	6.57 oc	---	---	---	---	---	0.00	---	---	---	6.567
6.50	137,611	595.00	6.68 oc	---	---	---	---	---	0.00	---	---	---	6.678
6.60	141,867	595.10	6.79 oc	---	---	---	---	---	0.00	---	---	---	6.788
6.70	146,123	595.20	6.90 oc	---	---	---	---	---	0.00	---	---	---	6.896
6.80	150,379	595.30	7.00 oc	---	---	---	---	---	0.00	---	---	---	7.002
6.90	154,634	595.40	7.11 oc	---	---	---	---	---	0.00	---	---	---	7.107
7.00	158,890	595.50	7.21 oc	---	---	---	---	---	0.00	---	---	---	7.210
7.10	163,146	595.60	7.31 oc	---	---	---	---	---	0.00	---	---	---	7.312
7.20	167,402	595.70	7.41 oc	---	---	---	---	---	0.00	---	---	---	7.412
7.30	171,658	595.80	7.51 oc	---	---	---	---	---	0.00	---	---	---	7.511
7.40	175,914	595.90	7.61 oc	---	---	---	---	---	0.00	---	---	---	7.608
7.50	180,170	596.00	7.71 oc	---	---	---	---	---	0.00	---	---	---	7.705
7.60	185,172	596.10	7.80 oc	---	---	---	---	---	0.00	---	---	---	7.800
7.70	190,175	596.20	7.89 oc	---	---	---	---	---	0.00	---	---	---	7.894
7.80	195,177	596.30	7.99 oc	---	---	---	---	---	0.00	---	---	---	7.987
7.90	200,179	596.40	8.08 oc	---	---	---	---	---	0.00	---	---	---	8.079
8.00	205,182	596.50	8.17 oc	---	---	---	---	---	0.00	---	---	---	8.170
8.10	210,184	596.60	8.26 oc	---	---	---	---	---	0.00	---	---	---	8.260
8.20	215,187	596.70	8.35 oc	---	---	---	---	---	0.00	---	---	---	8.349
8.30	220,189	596.80	8.44 oc	---	---	---	---	---	0.00	---	---	---	8.437
8.40	225,191	596.90	8.52 oc	---	---	---	---	---	0.00	---	---	---	8.524
8.50	230,194	597.00	8.61 oc	---	---	---	---	---	0.00	---	---	---	8.610
8.53	232,159	597.03	8.64 oc	---	---	---	---	---	0.00	---	---	---	8.639
8.57	234,124	597.07	8.67 oc	---	---	---	---	---	0.00	---	---	---	8.667
8.60	236,089	597.10	8.69 oc	---	---	---	---	---	0.00	---	---	---	8.695
8.63	238,055	597.13	8.72 oc	---	---	---	---	---	0.00	---	---	---	8.723
8.67	240,020	597.17	8.75 oc	---	---	---	---	---	0.00	---	---	---	8.751
8.70	241,985	597.20	8.78 oc	---	---	---	---	---	0.24	---	---	---	9.014
8.73	243,950	597.23	8.81 oc	---	---	---	---	---	0.76	---	---	---	9.562
8.76	245,915	597.26	8.83 oc	---	---	---	---	---	1.44	---	---	---	10.28
8.80	247,881	597.30	8.86 oc	---	---	---	---	---	2.27	---	---	---	11.13
8.83	249,846	597.33	8.89 oc	---	---	---	---	---	3.20	---	---	---	12.09

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

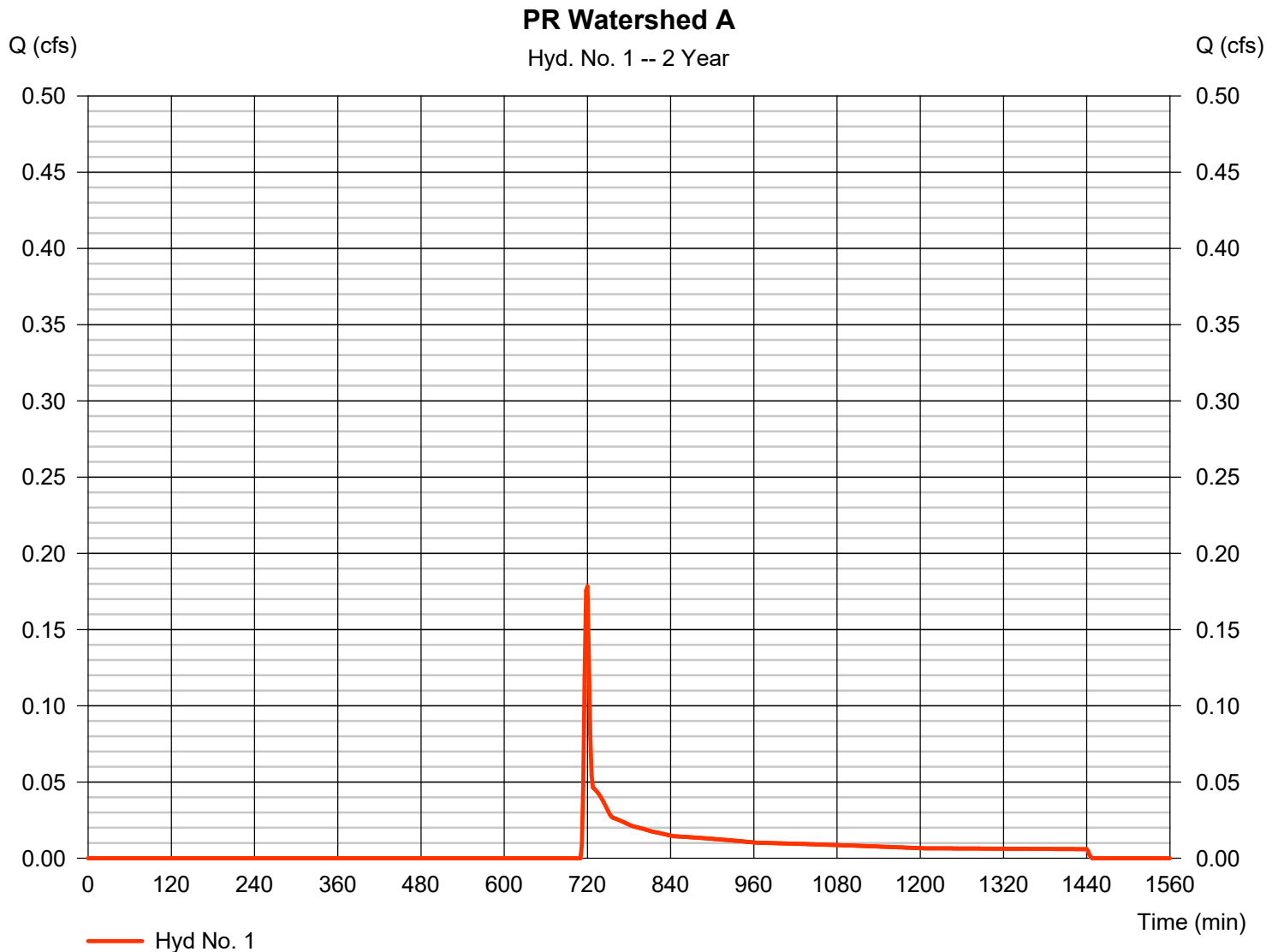
Monday, 04 / 26 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 567 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

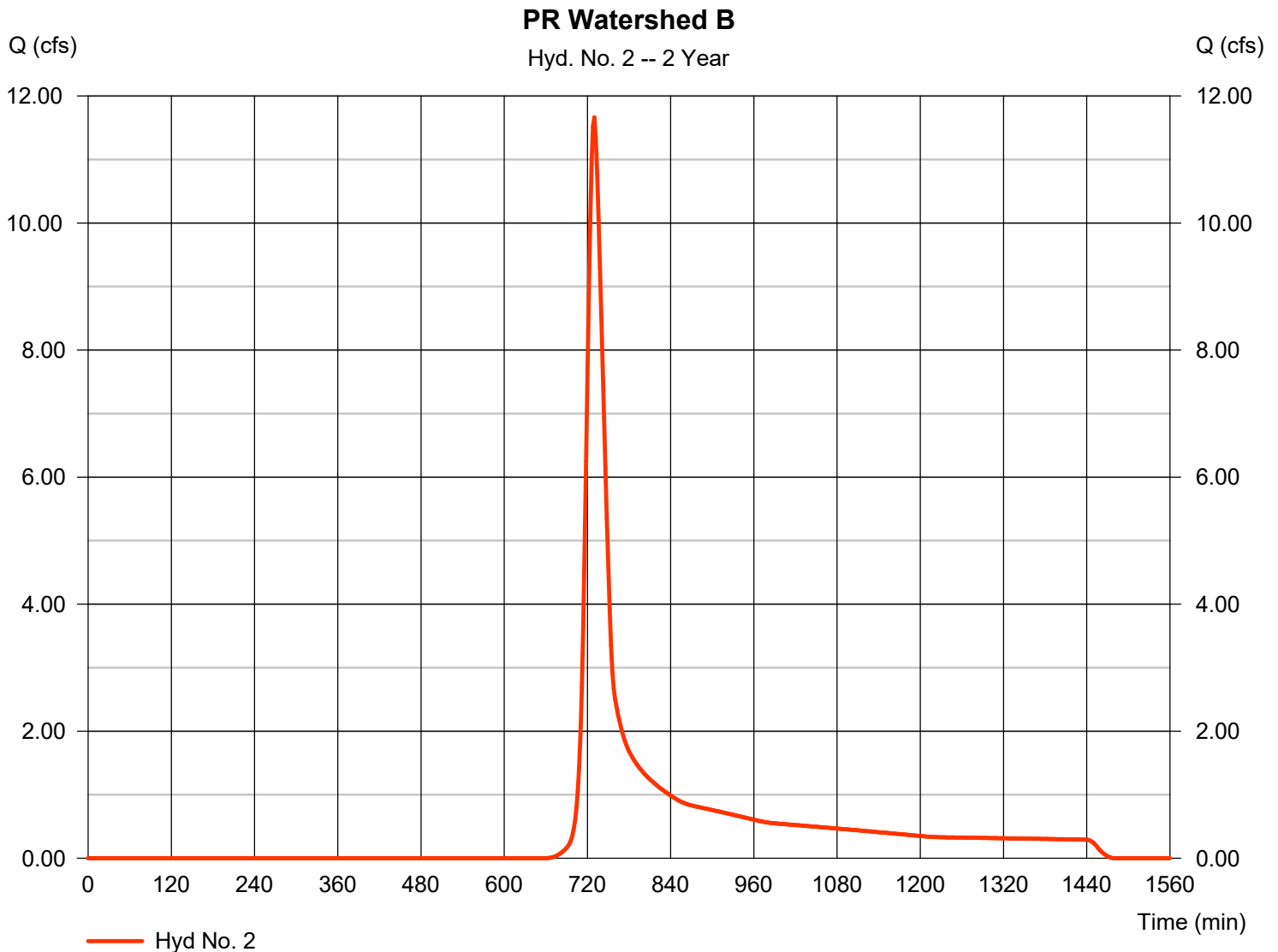
Monday, 04 / 26 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 11.66 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 45,856 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

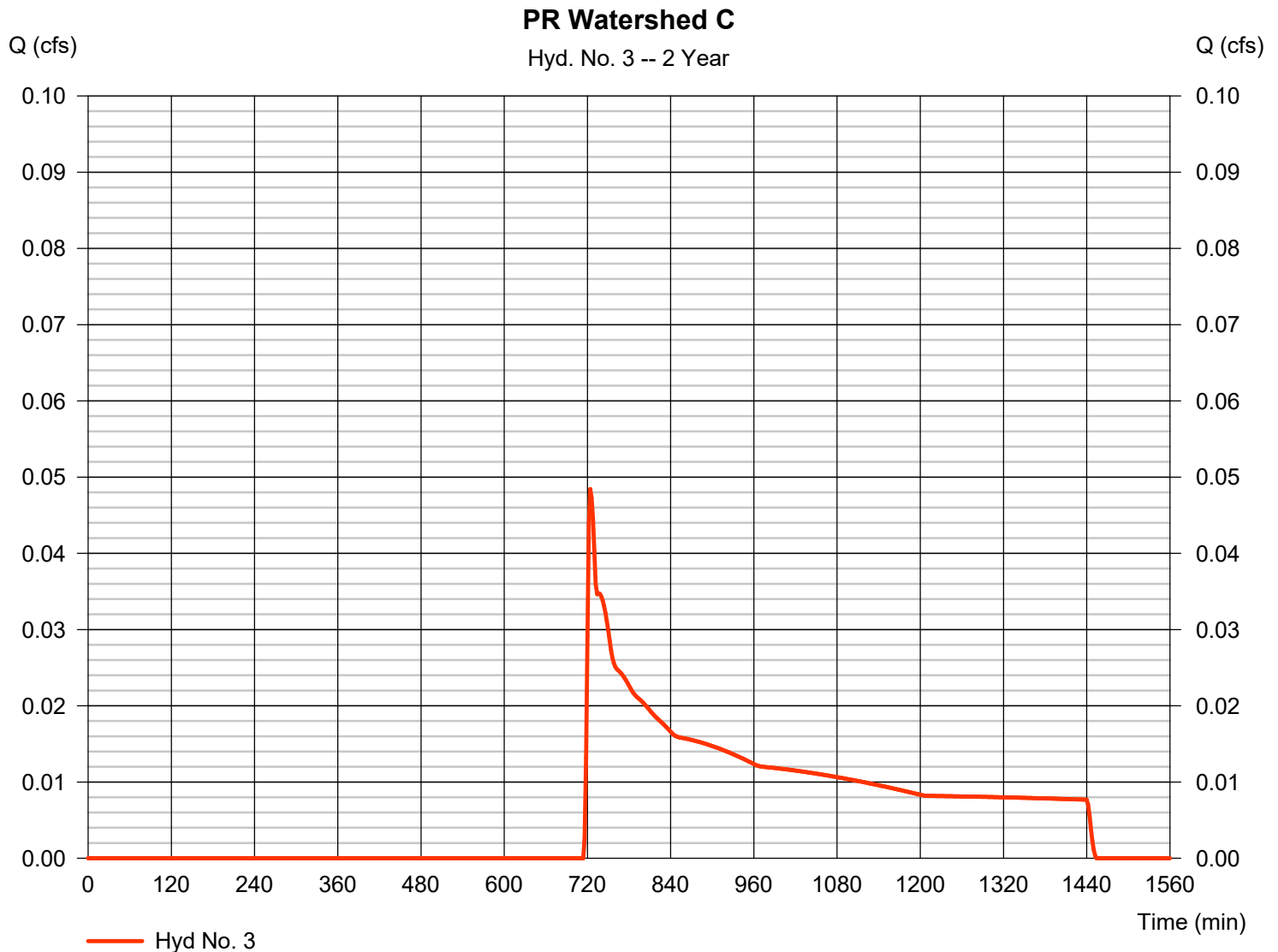
Monday, 04 / 26 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.048 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 560 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

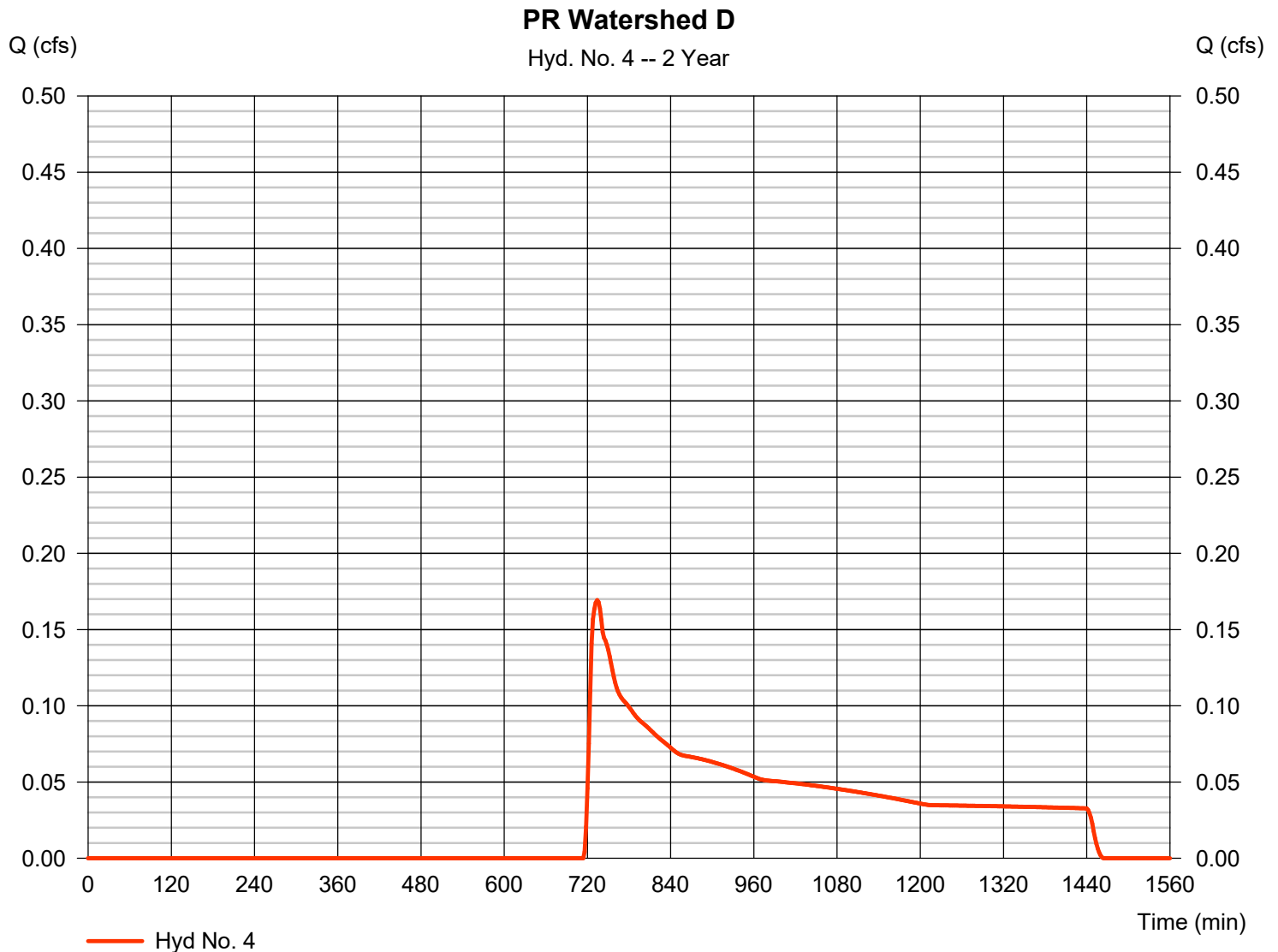
Monday, 04 / 26 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 0.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 2,379 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



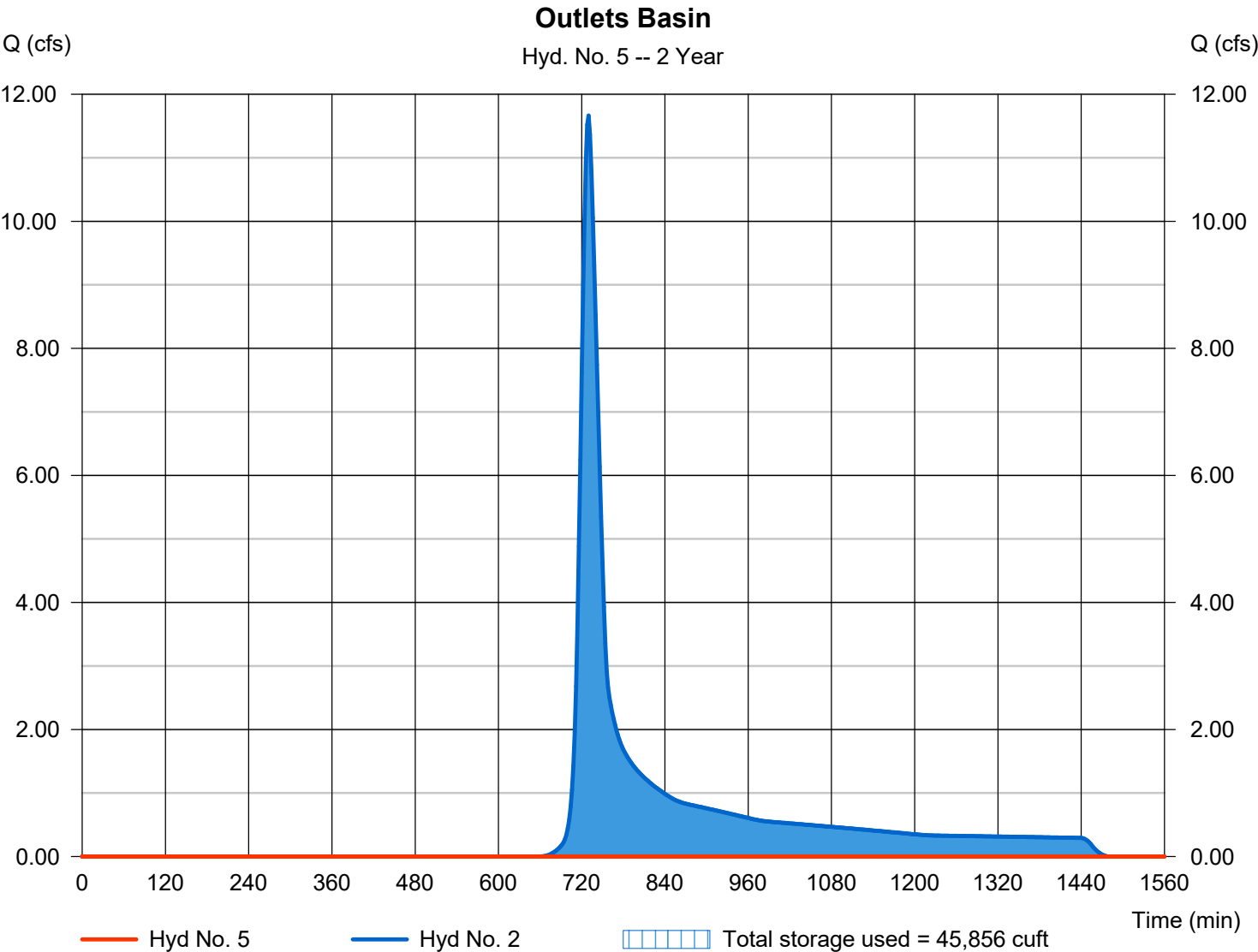
Hydrograph Report

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 591.96 ft
Reservoir name	= Pond - Full	Max. Storage	= 45,856 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

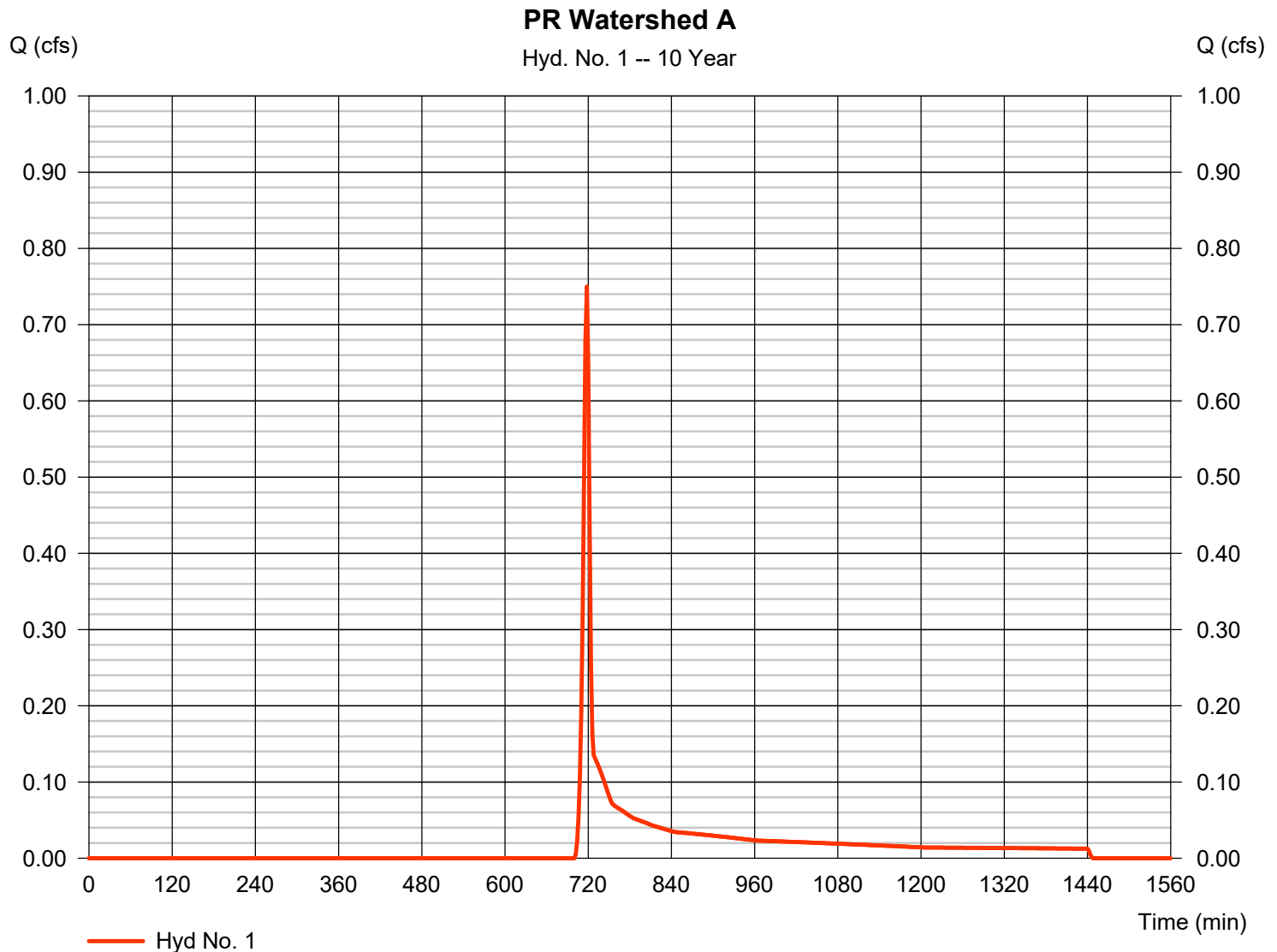
Monday, 04 / 26 / 2021

Hyd. No. 1

PR Watershed A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.750 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,606 cuft
Drainage area	= 0.770 ac	Curve number	= 66*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.120 \times 98) + (0.120 \times 55) + (0.530 \times 61)] / 0.770$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

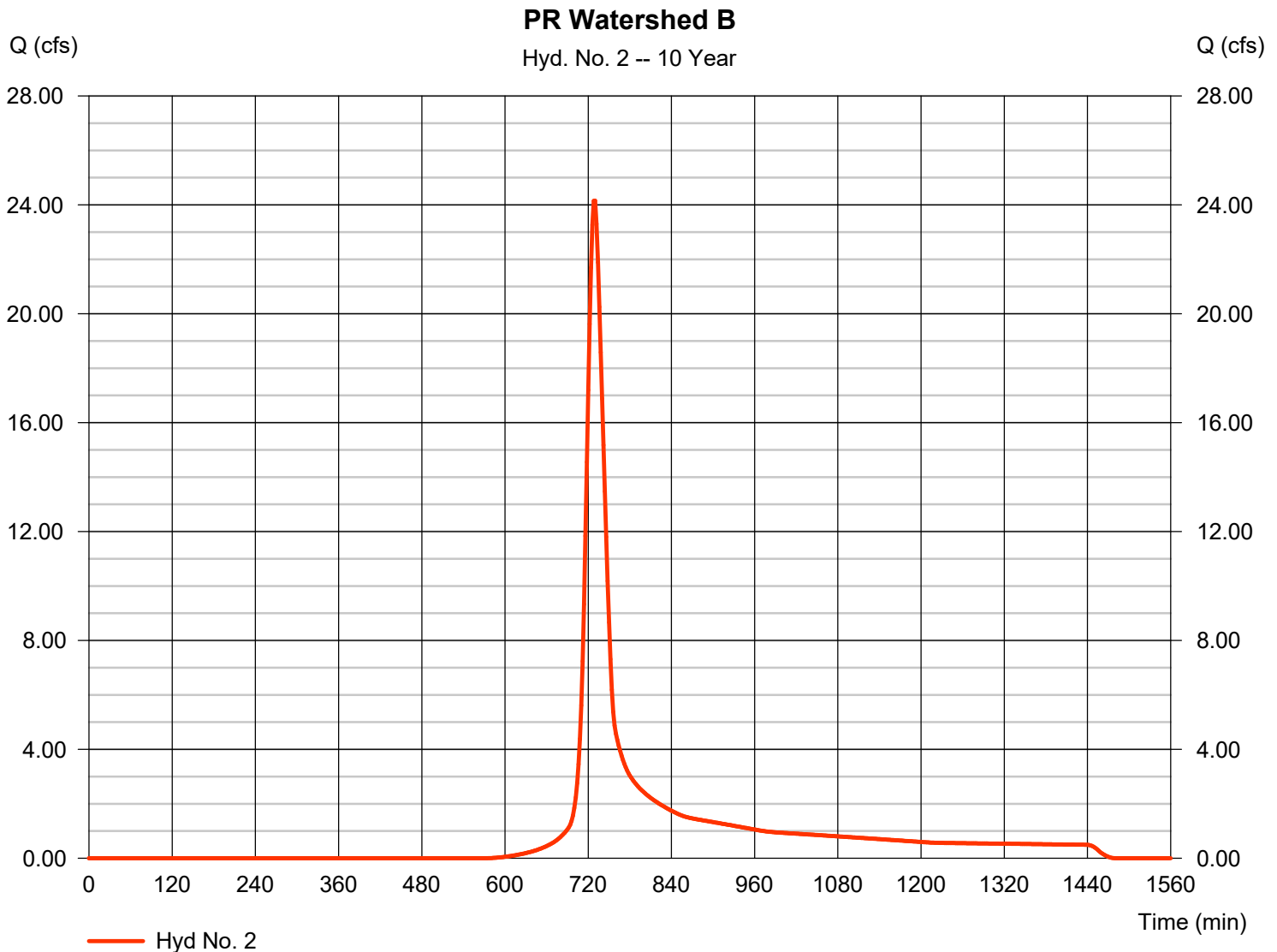
Monday, 04 / 26 / 2021

Hyd. No. 2

PR Watershed B

Hydrograph type	= SCS Runoff	Peak discharge	= 24.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 90,363 cuft
Drainage area	= 18.650 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 23.60 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(5.900 \times 98) + (0.140 \times 98) + (5.640 \times 85) + (6.970 \times 61)] / 18.650$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

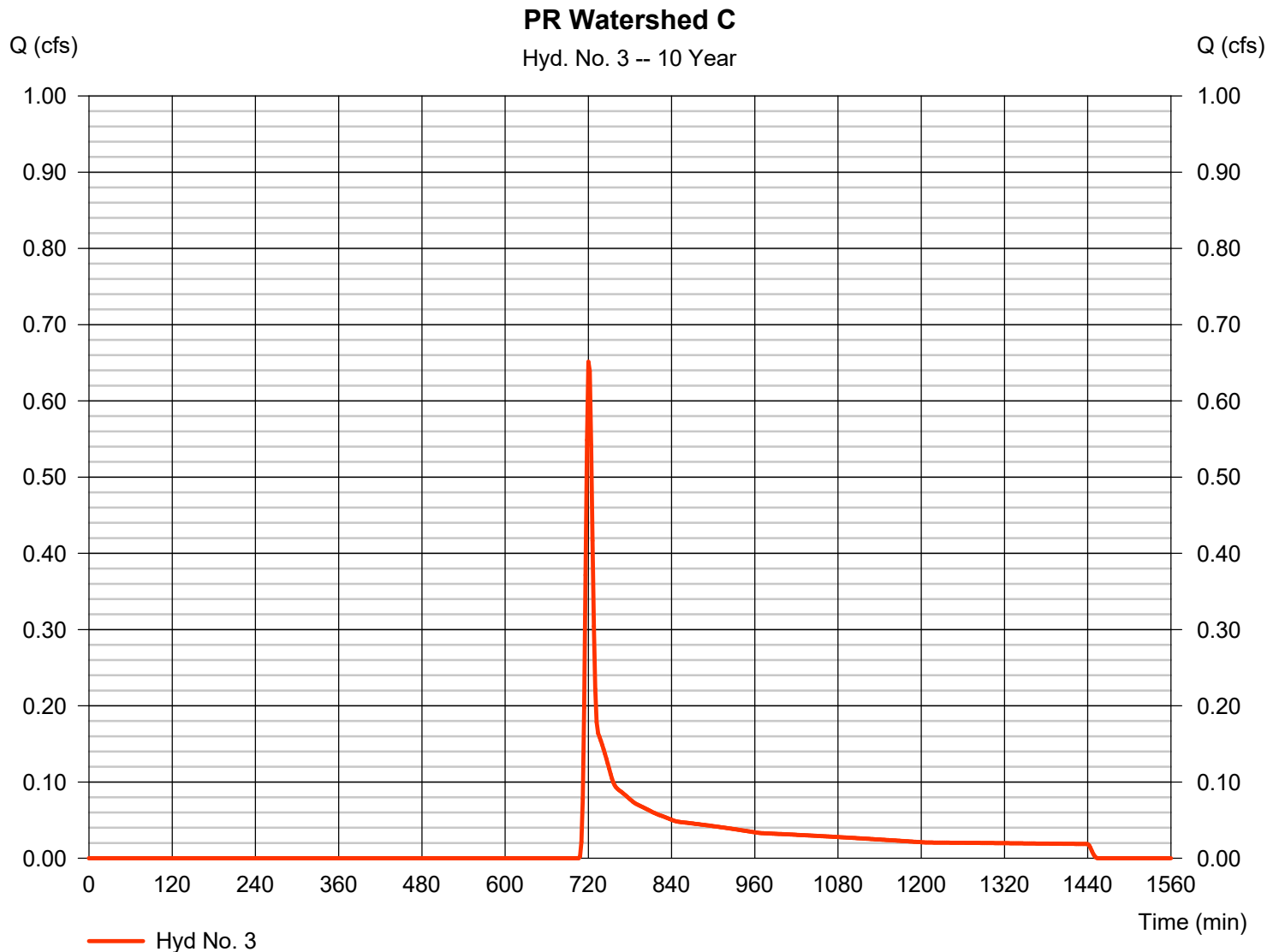
Monday, 04 / 26 / 2021

Hyd. No. 3

PR Watershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.651 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 2,026 cuft
Drainage area	= 1.330 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 98) + (0.120 \times 55) + (1.200 \times 61)] / 1.330$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

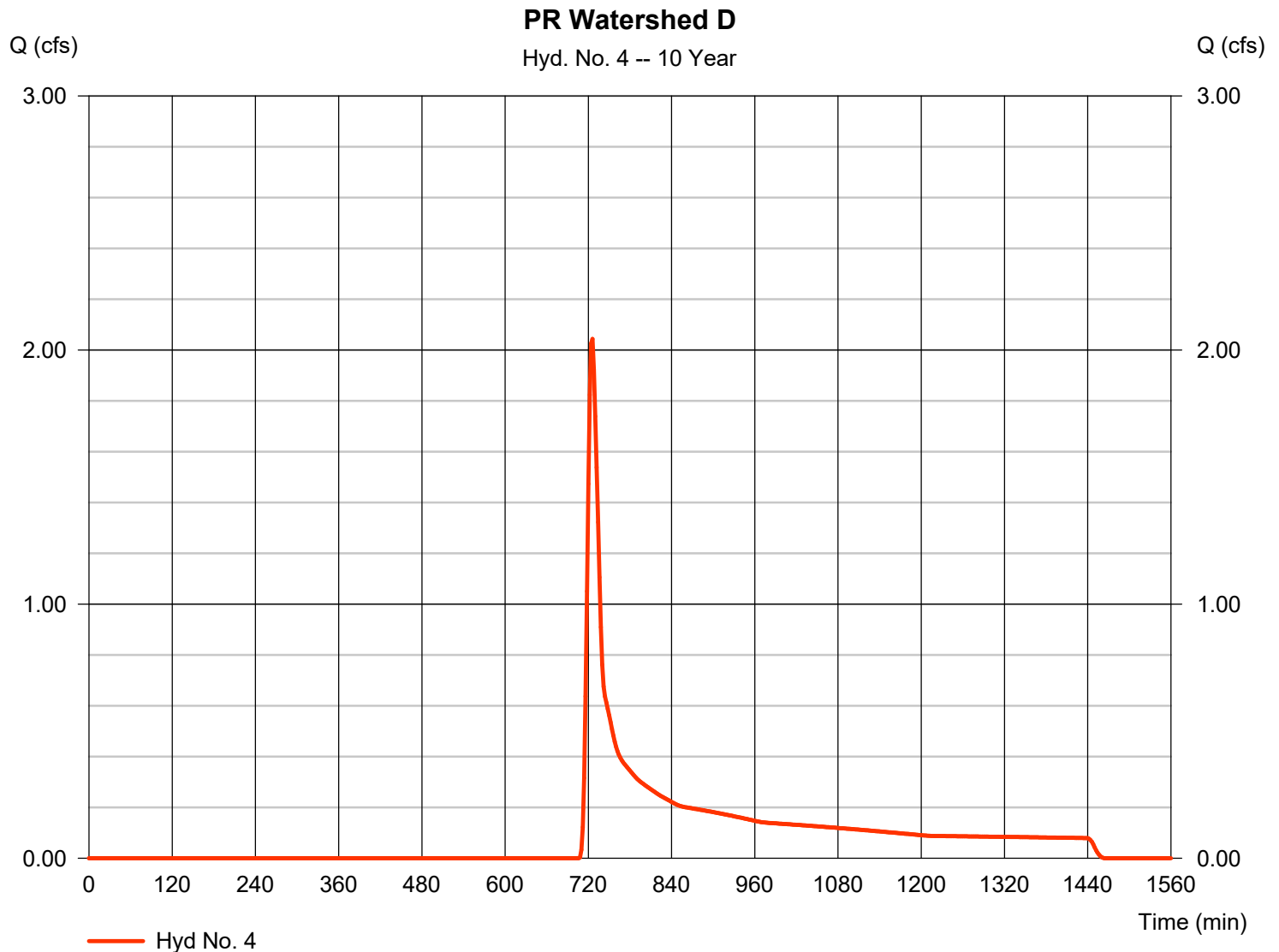
Monday, 04 / 26 / 2021

Hyd. No. 4

PR Watershed D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.044 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 8,614 cuft
Drainage area	= 5.800 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.70 min
Total precip.	= 3.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.100 \times 98) + (0.250 \times 55) + (5.450 \times 61)] / 5.800$



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

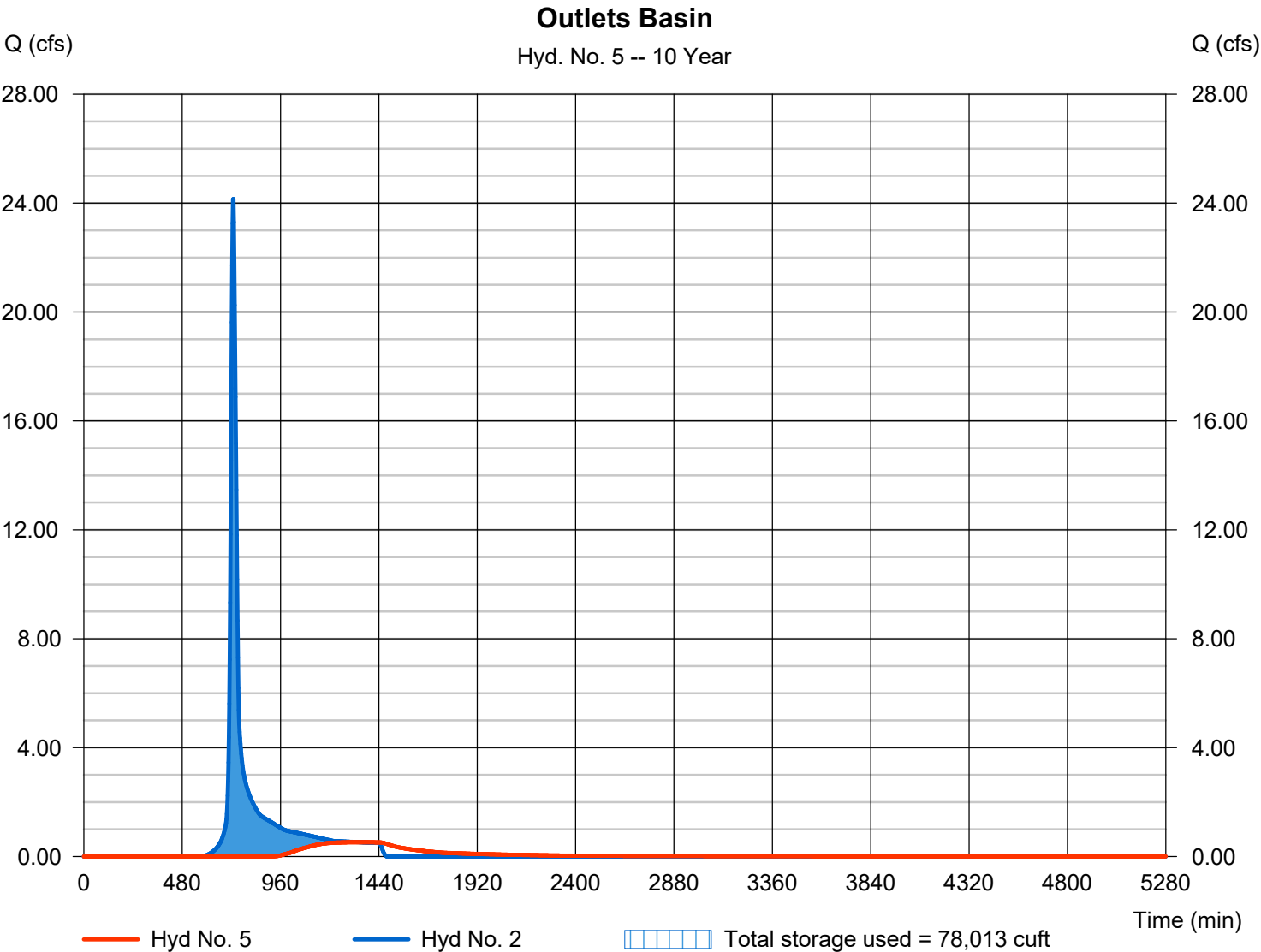
Monday, 04 / 26 / 2021

Hyd. No. 5

Outlets Basin

Hydrograph type	= Reservoir	Peak discharge	= 0.525 cfs
Storm frequency	= 10 yrs	Time to peak	= 1346 min
Time interval	= 2 min	Hyd. volume	= 22,365 cuft
Inflow hyd. No.	= 2 - PR Watershed B	Max. Elevation	= 593.26 ft
Reservoir name	= Pond - Full	Max. Storage	= 78,013 cuft

Storage Indication method used.



Hyd No. 5

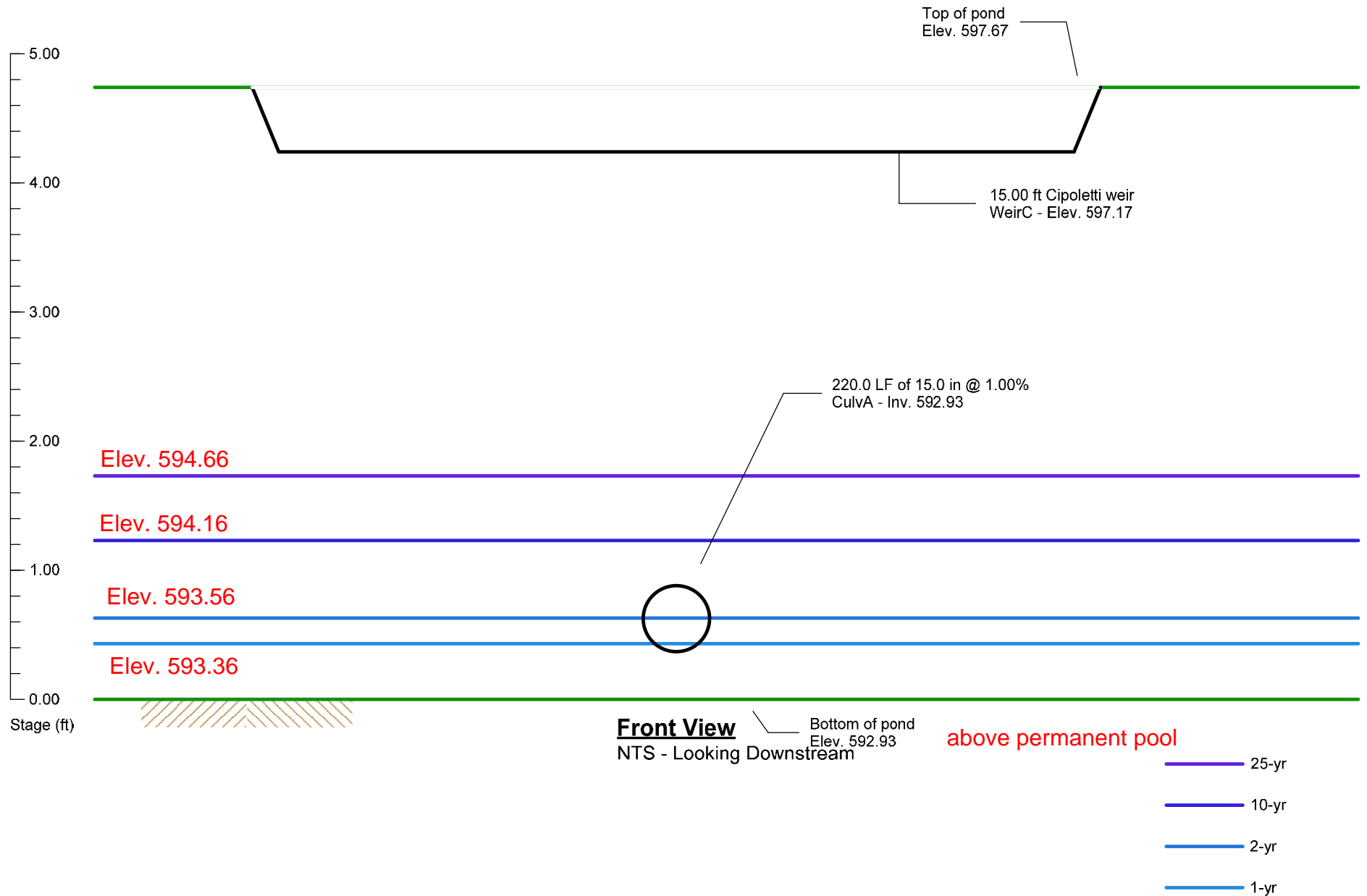
Hyd No. 2

Total storage used = 78,013 cuft

Pond No. 1 - Pond Update

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

1 to 25 year outlet pipe



Inflow hydrograph = 2. SCS Runoff - PR Watershed B

Pond Report

pond above permanent pool with outlet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Tuesday, 05 / 25 / 2021

Pond No. 1 - Pond Update

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 592.93 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	592.93	24,621	0	0
0.07	593.00	29,227	1,885	1,885
1.07	594.00	34,991	32,109	33,994
2.07	595.00	39,515	37,253	71,247
3.07	596.00	45,603	42,559	113,806
4.07	597.00	54,445	50,024	163,830
4.74	597.67	98,238	51,148	214,977

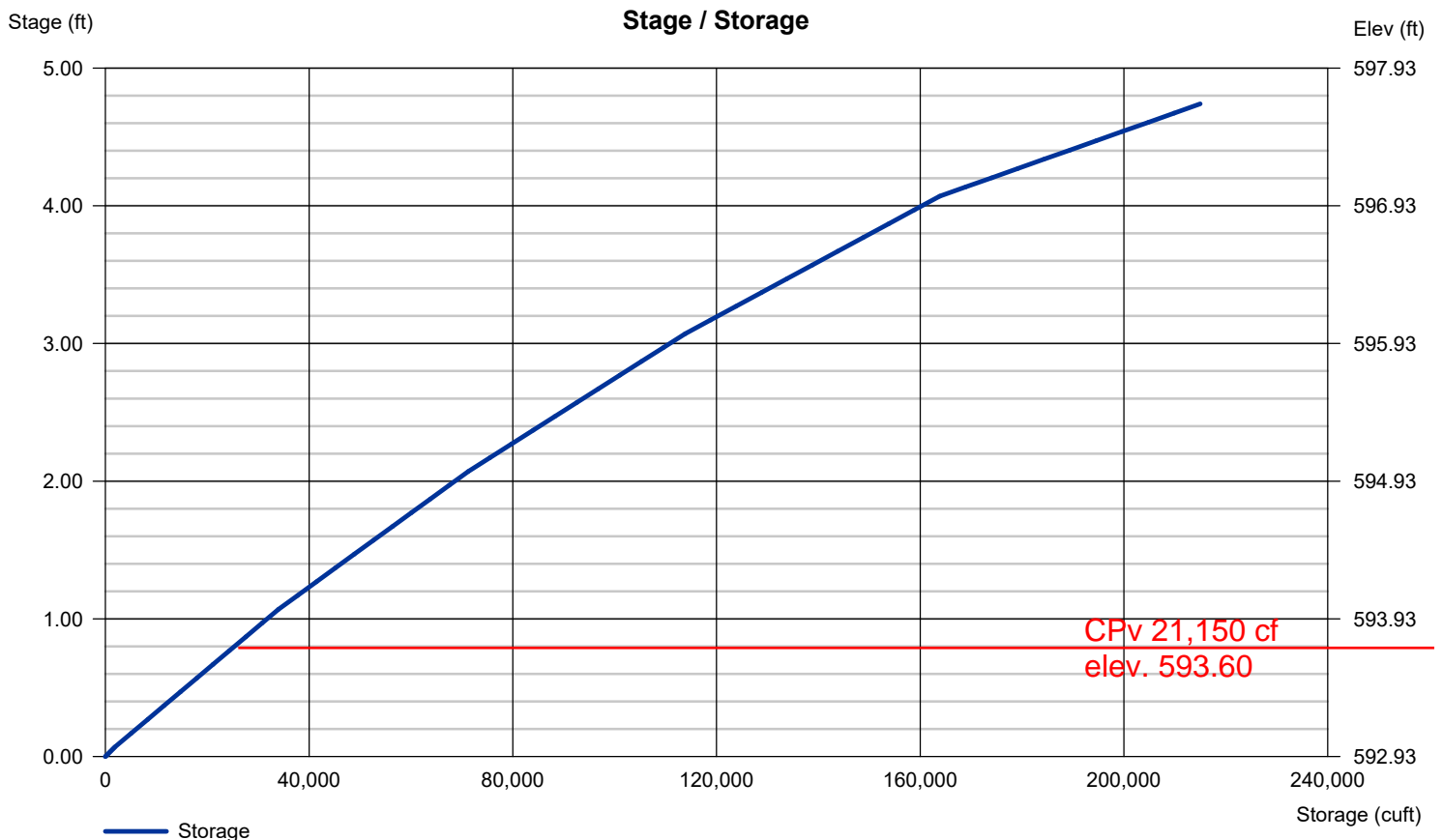
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 592.93	0.00	0.00	0.00
Length (ft)	= 220.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	15.00	0.00
Crest El. (ft)	= 0.00	0.00	597.17	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	Ciphti	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

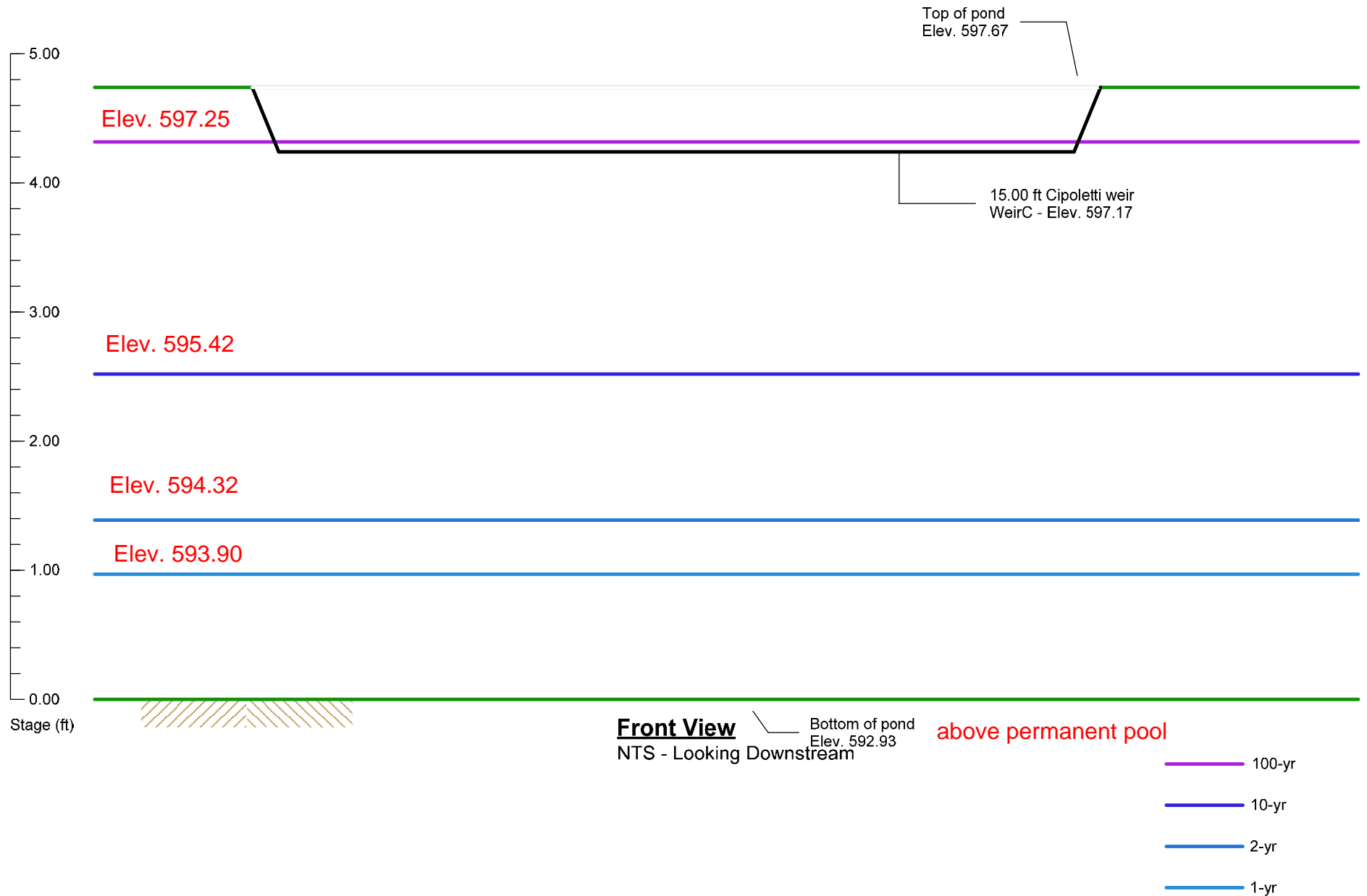
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond No. 1 - Pond Update

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

100 year storm with no outlet pipe



Inflow hydrograph = 2. SCS Runoff - PR Watershed B

Pond Report full pond with outlet pipe for WQv

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Monday, 04 / 26 / 2021

Pond No. 6 - Pond - Full

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 588.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	588.50	3,720	0	0
0.50	589.00	7,487	2,802	2,802
1.50	590.00	12,132	9,810	12,611
2.50	591.00	17,325	14,729	27,340
3.50	592.00	21,215	19,270	46,610
4.50	593.00	25,645	23,430	70,040
5.50	594.00	34,991	30,318	100,358
6.50	595.00	39,515	37,253	137,611
7.50	596.00	45,603	42,559	180,170
8.50	597.00	54,445	50,024	230,194
8.83	597.33	64,652	19,652	249,846

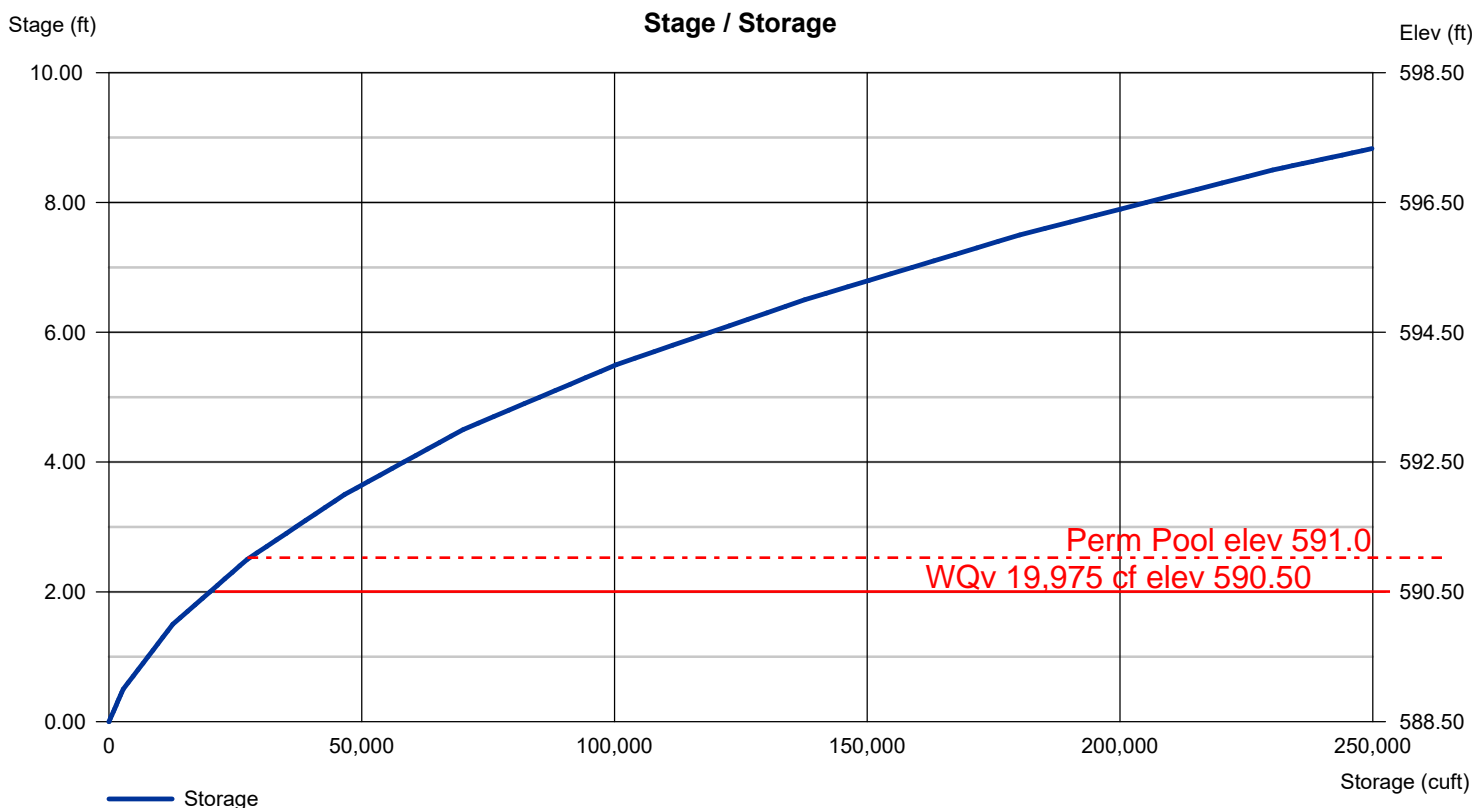
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 592.93	0.00	0.00	0.00
Length (ft)	= 220.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	15.00	0.00
Crest El. (ft)	= 0.00	0.00	597.17	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	Ciphti	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

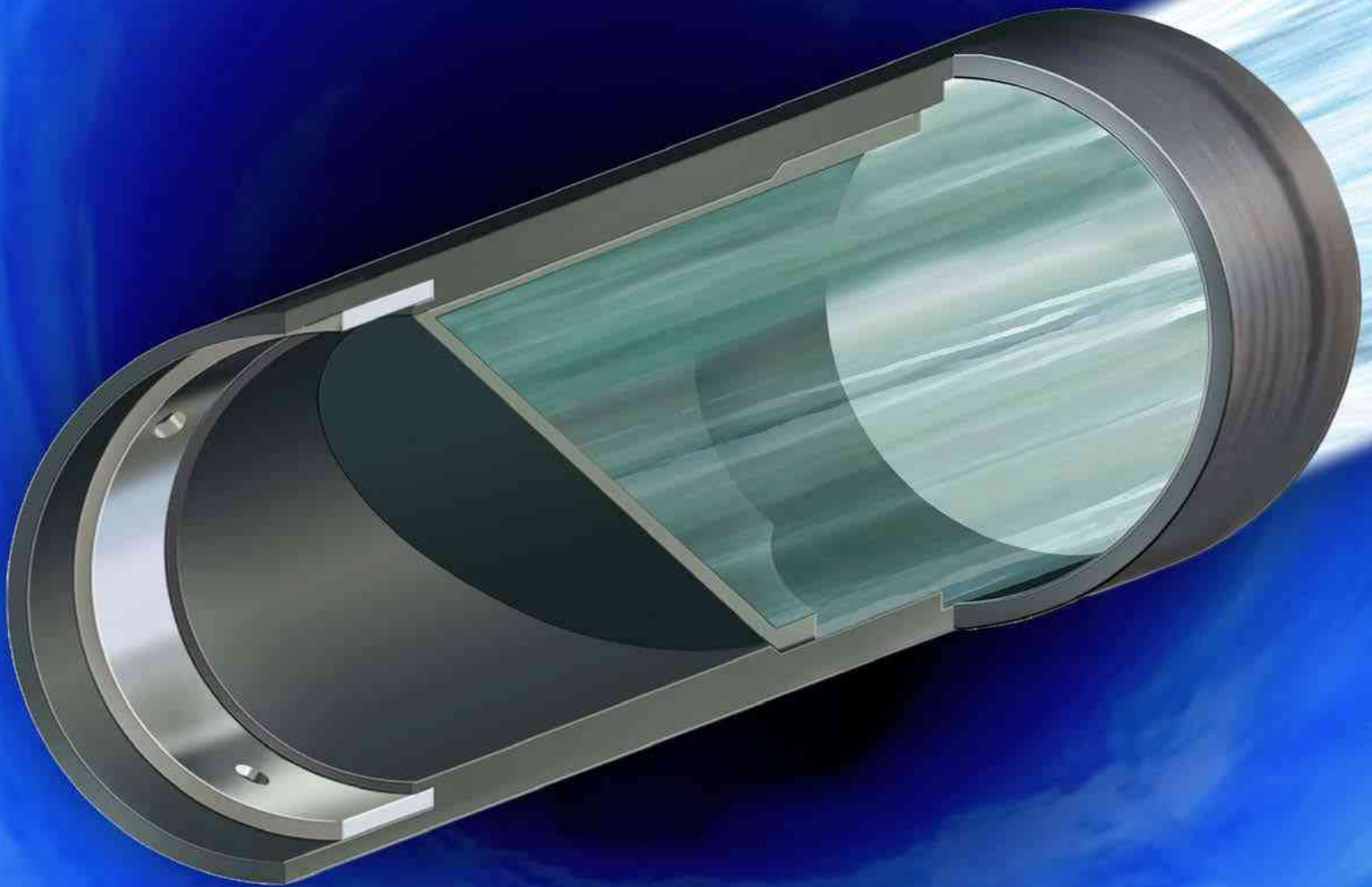
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Red Valve®

THE CHECKMATE® ADVANTAGE

The World's Most Reliable Check Valve
Engineering Guide



Red Valve Company, Inc.

Continuing a Legacy of Innovation, Leadership and Customer Service

More than 60 years ago, Red Valve Company was founded on a simple promise: provide the highest quality engineered valves backed by an unsurpassed level of technical innovation and customer service. With that promise began a legacy of leadership—and a never-ending quest to solve the world's toughest flow control challenges while exceeding our customers' expectations.

As the world leader in Pinch Valve and Check Valve technology, that legacy lives on every day at Red Valve Company, and the innovative CheckMate® Inline Check Valve is proof. The CheckMate® Inline Check Valve is rooted in the same superior understanding of elastomer technology as the legendary Tideflex® Check Valve, one of the most well-known valves proven for providing reliable long-lasting backflow prevention, across the globe.

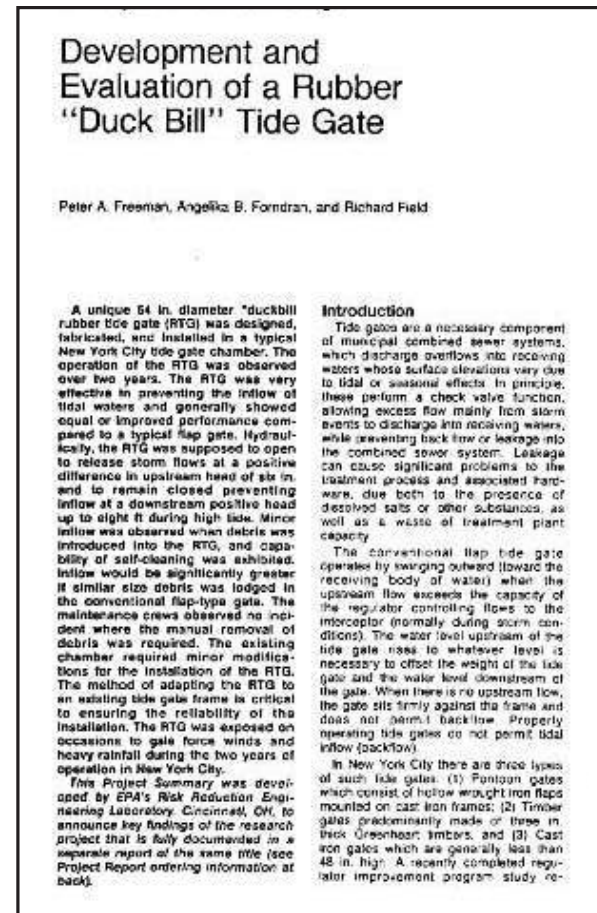
Being a world leader in valve technology is more than a slogan—it's a promise, carried forward by the hundreds of dedicated Red Valve employees and sales representatives around the world. Call us any time. We are ready to speak with you personally—right now.



The patented CheckMate® Inline Check Valve is rooted in the same superior understanding of elastomer technology as the legendary Tideflex® Check Valve, one of the most well-known valves in the world.

A Pioneer in the Check Valve Industry

In 1984, the United States Environmental Protection Agency (EPA) commissioned Red Valve Company to develop and test an alternative to tide gate valves. In their report, Development and Evaluation of a



Rubber "Duck Bill" Tide Gate, the EPA states, "Increasing the reliability and performance of tide gates has a beneficial impact on the general pollution abatement program for the nation's waterways."

In response, Red Valve Company developed and patented its elastomer "duckbill" Tideflex® Check Valve to eliminate the operational and maintenance problems associated with flapgate check valves, including corrosion of mechanical parts, freezing open or shut, warping and clogging due to entrapped debris.

The EPA rigorously tested the Tideflex® Check Valve for two years and found that the valve showed, "Significant improvement over flapgate valves in terms of leakage inflow, entrapment of debris, capability to self clean and susceptibility to marine fouling."

Since the creation of the Tideflex® Check Valve in 1984, years of research and development, testing and proven performance has led to the globalization of the TF-2 Tideflex® Check Valve and the next generation Tideflex® TF-1. With improved flow efficiency characteristics and the latest technology in elastomers, Red Valve continues to deliver on its promise of staying on the forefront of technology and new product development. The Tideflex® name is respected and recognized around the world as the most reliable valve for backflow prevention. It is also worth noting that the first Tideflex® Check Valve sold in 1984 is still in service today, with more than 700,000 Tideflex® Check Valves in service around the world, reliably solving inflow and intrusion problems.

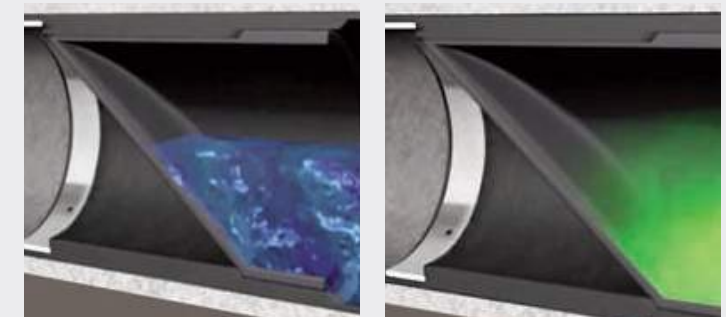
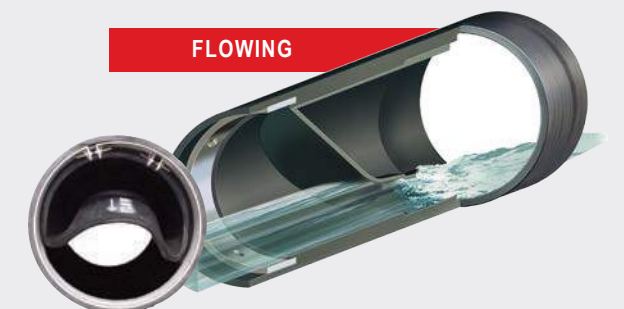


CheckMate® Valve Solves City's Odor Problem

When foul odors were plaguing a soybean producing town in Illinois, officials turned to Red Valve for the most reliable, cost-effective solution.

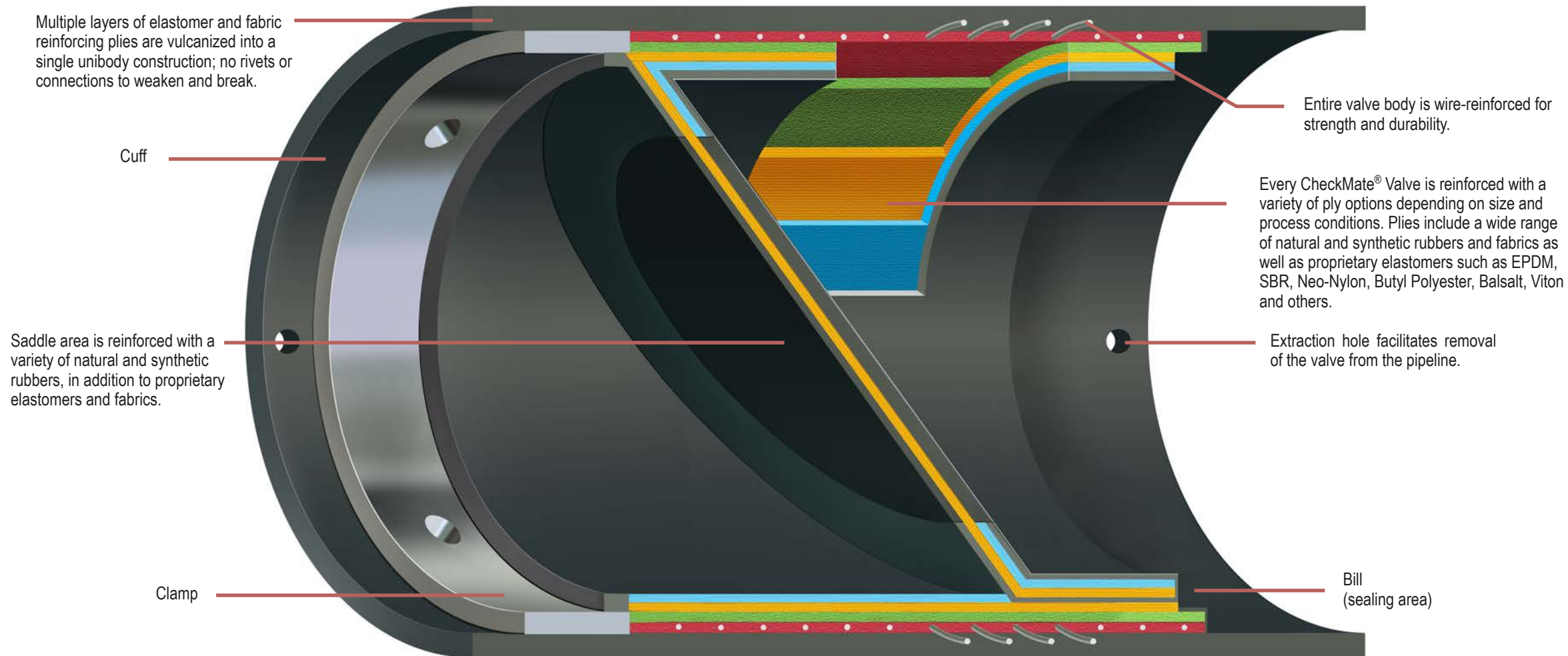
A chemical deodorizing system and a pump station were also evaluated, but far exceeded budget constraints. The CheckMate® Inline Check Valve proved to be the perfect solution.

The CheckMate® Inline Valve was installed in 2012 and has worked flawlessly ever since, completely blocking the backdraft of the odor. Best of all, there has been zero maintenance expense. According to a public works official, ***"This is one of the most cost-effective solutions to a nagging quality of life problem the City has ever implemented. We are now looking at other parts of the combined sewer system that has a few small odor problems due to escaping sewer gas."***



For an animated demonstration of the CheckMate® in operation, please visit: <http://www.tideflex.com/checkmate>

There Is Only One CheckMate® Inline Valve!



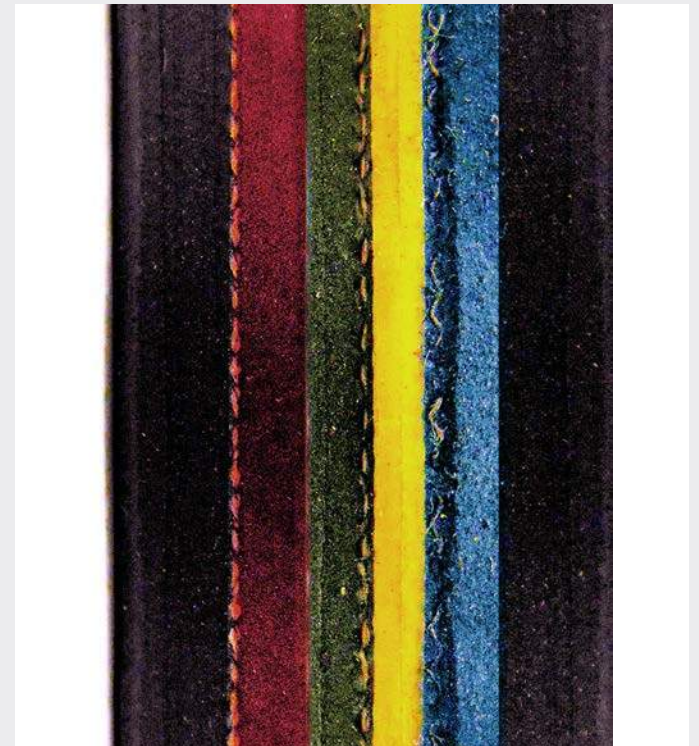
The CheckMate® Inline Check Valve: Accept No Substitutes!

The innovative CheckMate® Inline Check Valve has quickly become the specified choice for inline residential, municipal and commercial areas where complete, dependable backflow prevention is critical. It has also become the valve of choice for municipal and industrial applications such as storm water, wastewater, highway runoff, CSO, SSO and flood control by preventing unwanted backflow that can cause surges and flooding. The CheckMate® Inline Check Valve minimizes damage to wetlands, beaches and residential areas and

eliminates hydraulic surges to wastewater treatment plants, saving municipalities millions of dollars in maintenance and treatment costs.

One of the keys to the CheckMate® Valve's exceptional dependability and longevity is Red Valve's unmatched elastomer experience—experience, application knowledge and engineering know-how. Every CheckMate® Inline Check Valve is hand-fabricated, made of multiple layers of varying natural and

synthetic elastomers, wire and fabric-reinforced plies, all of which are vulcanized into a robust unibody valve. Unlike competing designs, there are no molded parts or mechanical fasteners and rivets that will loosen, act as catch points, break or corrode—ever. The key to CheckMate® Valve's longevity, performance and low headloss characteristics is the design and construction.



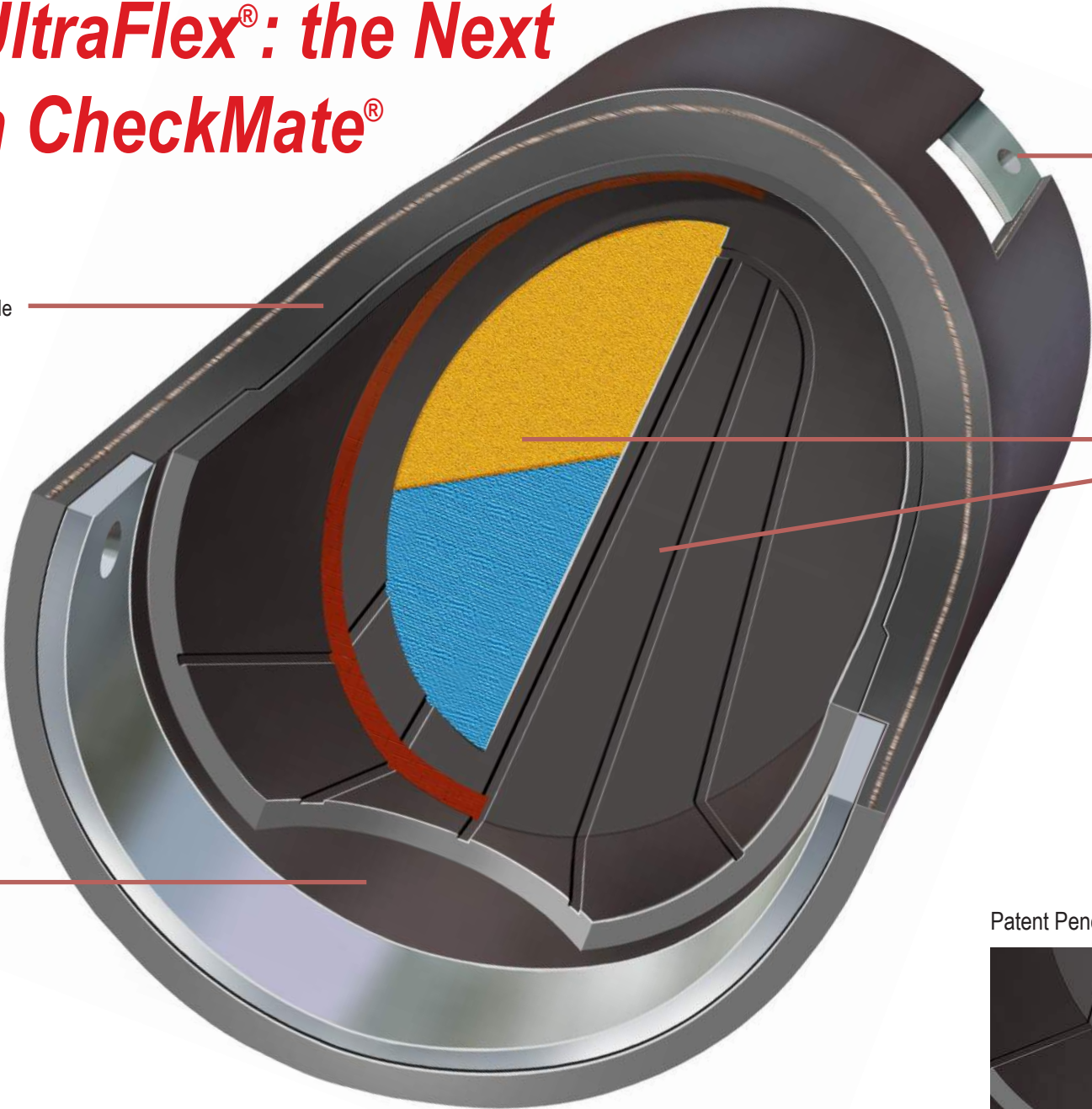
Red Valve's legendary elastomer technology and knowledge is the real story behind the CheckMate® Valve's unrivaled performance. Every CheckMate® Valve is reinforced with various natural and synthetic plies, specifically engineered for your specific application.



CheckMate® Inline Check Valves use state-of-the-art elastomers and fabric technology with no metal hinges, rivets, fasteners or moving parts. The valve's unibody construction is ideally suited for CSO and diversion chamber applications and installed inside the pipeline on either the upstream or downstream side of a diversion chamber.

Introducing UltraFlex®: the Next Generation in CheckMate® Technology!

Entire valve is vulcanized into a single unibody construction; no rivets or connections to weaken and break.



Clamp

Saddle area features strategically placed reinforcing ribs and segmented pads customized for each application.

The "Arc Notch" in the UltraFlex® Valve's bill functions as a hinge, greatly reducing the forces required to unseat the valve. This patented design achieves a very low snap-open pressure.

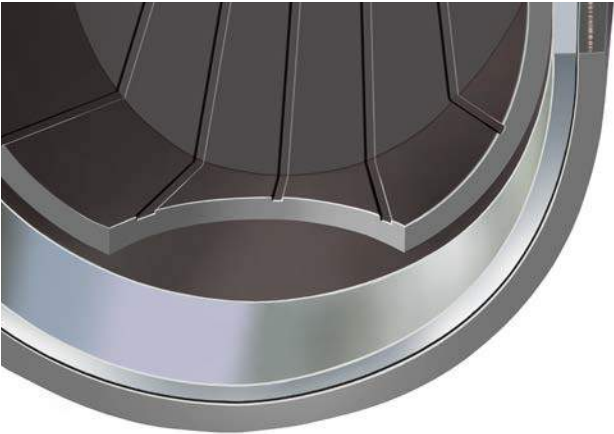
Unmatched Elastomer Research, Innovation and Knowledge

The patented CheckMate UltraFlex® Inline Check Valve features drastically improved hydraulic and performance characteristics to its predecessor, the original CheckMate® Check Valve. Strategically placed reinforcing ribs, segmented pads and the "Arc Notch" bill combine to significantly improve flow efficiency with significantly reduced headloss, while providing absolute backflow protection.

Once upstream head pressure reaches a specific level, CheckMate® Inline Check Valves are designed to "snap" or "pop"

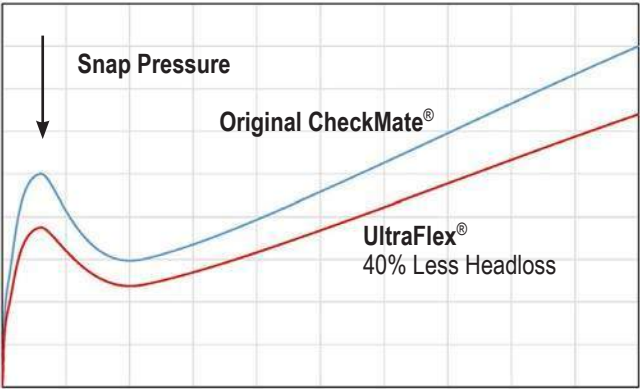
open, allowing the rapid discharge of flow. The new UltraFlex®, with its patented "Arc Notch" and optimized construction, allows the next generation CheckMate® Valve to open 40% sooner. As a result, the pipeline and entire collection system drains up to 40% faster. Because the UltraFlex® Valve "snaps" or "pops" open with less head pressure, pipeline capacity is significantly increased while the chance for standing water to collect upstream of the valve is totally eliminated.

Patent Pending



Strategically placed reinforcing ribs, segmented pads and the bill's unique "Arc Notch" combine to significantly improve flow efficiency with significantly reduced headloss while providing absolute backflow protection.

UltraFlex® Boasts 40% Lower "Snap Pressure"



The new CheckMate UltraFlex® Valve boasts a 40% lower snap pressure requirement to open or unseat the valve, without compromising the valve's ability to seal. This greatly improves capacity in pipelines and the rapid drainage of upstream flow through the valve. With its patented "Arc Notch" design, the CheckMate UltraFlex® Inline Check Valve boasts a significantly improved flow efficiency, due to reduced head pressure levels required to "snap" open the valve.



When upstream head reaches 50-75% of pipe diameter (for example, 9" head in a 12" valve), the UltraFlex® bill "snaps" open into a concave shape, allowing substantially more flow with the same amount of head. The valve will progressively open with increased head and flow. Picture shows moment when the valve "snaps" open.



The CheckMate® Valve will crack open and flow with as little as 1" of head pressure.



Once the CheckMate® Valve "snaps" open, it achieves rapid discharge of flow.

Independently Tested, Field Validated



Independent Hydraulic Testing

CheckMate® Inline Check Valves are independently tested to determine their hydraulic characteristics in both free and submerged discharge applications. Published hydraulic data is validated through this independent testing, and Finite Element Analysis data is also provided to ensure the CheckMate® Valve meets your exact specifications. CheckMate® Valves are ideally suited for interceptor, manhole and outfall pipelines because

they allow flow to discharge with very little headloss and prevent backflow. The CheckMate® Valve's innovative inline design allows it to be easily installed without modifications to existing structures, making it the perfect choice for both municipalities and commercial property owners.

To supplement independent hydraulic testing, Red Valve continually conducts research and development and additional in-house testing to improve existing products and develop new products.



Thousands of CheckMate® Inline Check Valves are currently in service around the globe.

Features and Benefits of CheckMate®

- Extremely Low Headloss
- No Moving Mechanical Parts to Corrode, Catch Debris or Fail
- Heavy Duty Elastomer Unibody Construction
- Quick and Easy Installation
- Seals Around Debris
- Operates on Differential Pressure, Totally Passive
- Virtually No Maintenance
- Self-draining, 1" of Cracking Pressure
- Silent, Non-slamming
- Available in Sizes 3" (75 mm) to 84" (2100 mm)
- Extensive Independent Hydraulic Testing



CheckMate® Valves are ideally suited for interceptor, manhole and outfall pipelines, because they maximize pipeline storage and capacity while preventing backflow into upstream pipelines, collection systems and sewage treatment plants.

Simple Design for Simple Installation

The CheckMate® Inline Check Valve is extremely easy to install, regardless of the existing environment or piping. Its inherent design makes it the most user-friendly inline check valve on the market today. From the upstream or downstream end of the pipe, simply insert the valve into position and clamp it into place. Typically, no modification to the pipe or structure is required to install the CheckMate®. Because the CheckMate® is recessed inside of the pipe, additional permitting is not required. The results are construction cost savings, reduced installation time, and reduced operational costs.



CheckMate® Valves are easily installed regardless of difficult pipe end geometry or pipes in poor end condition. There is no need to rebuild headwalls.

A Wide Range of Shapes and Sizes

Elliptical, Arch and Rectangular Pipes

Elliptical, Arch and Rectangular Pipes for drainage and flood prevention projects have become popular, particularly in high water table areas with shallow surface gradients. CheckMate® Inline Check Valves are the perfect solution as they can be customized to meet your specifications.



Arch Pipe CheckMate®



Elliptical Pipe CheckMate®



Rectangular Pipe CheckMate®

Rubber Flanged

Rubber Flanged CheckMate® Valves can be manufactured with an integral rubber upstream or downstream flange. The flanged CheckMate® gets inserted into the host pipe, then can be bolted to a mating flange or anchored to a concrete headwall. The flange can be circular with standard drilling, or circular, square or rectangular with custom flange drilling. The valve is supplied with retaining rings for mounting.

Thimble Inserts

A CheckMate® Thimble Insert is simply a CheckMate® Valve that is factory installed, clamped and pinned into flanged or plain-end pipe. The thimble insert assembly can either be inserted into the I.D. of the host pipe, or can be mounted to a mating flange or concrete headwall and extend beyond the pipe. Plain end thimble inserts are inserted into the host pipe and non-shrink grout is placed between the thimble insert O.D. and host pipe I.D. to form the seal.



Upstream Flanged CheckMate®



CheckMate® Thimble Insert



Red Valve Company, Inc.

Tideflex
Technologies

600 N. Bell Avenue
Carnegie, PA 15106

PHONE:
412/279-0044

FAX:
412/279-7878

www.redvalve.com

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Red Valve®

Valve Selection Guide for Wastewater Treatment

Red Valve®

MUNICIPAL COLLECTION AND DISTRIBUTION
Total System Solutions



“Rely on Red” for a Total System Solution to Your Water and Wastewater Treatment Challenges

No other company can match Red Valve's “Total System Solution” for water and wastewater treatment plants and municipal collection and distribution systems.

Since 1953, Red Valve has provided products for each phase of collection, distribution, separation, aeration, treatment and final discharge. Our complete product line provides customers with one source for on/off and control valves, check valves, pressure measurement, expansion compensation, air diffusers and effluent diffusers. All Red Valve products are designed to handle the rigors of handling raw sewage, sludge, scum and grit with abrasion-resistant, non-clogging designs.

Contact us today for a free copy of our new “Total System Solution” brochure for Municipal Collection and Distribution, or our comprehensive Valve Selection Guide for Wastewater Treatment.

SECTION 7 – NYS DEC COMPLIANCE

- GP-0-20-001 SPEDES Permit
- Notice of Intent
- MS4 Application and Acceptance Letter
- NOI DEC Acknowledgement Letter
- Notice of Termination (When Project is Completed)



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

A handwritten signature in black ink, appearing to be "John J. Ferguson", written over a horizontal line. The signature is stylized and cursive.

Authorized Signature

1-23-20

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System (“NPDES”)* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of “*construction activity*”, as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITIES**

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:
- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
 - (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;
 - (iii) *Minimize* the amount of soil exposed during *construction activity*;
 - (iv) *Minimize* the disturbance of *steep slopes*;
 - (v) *Minimize* sediment *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
 - (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

- c. **Dewatering.** *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.
- d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;
 - (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and
 - (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.
- e. **Prohibited Discharges.** The following *discharges* are prohibited:
 - (i) Wastewater from washout of concrete;
 - (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
 - (iv) Soaps or solvents used in vehicle and equipment washing; and
 - (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual.

The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site discharges directly to tidal waters, or fifth order or larger streams.
- (iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

- (i) No Affect
- (ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or

d. Documentation that:

- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of Owner or Operator) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*. This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.
3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

- c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:
- a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

- b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.
- 4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

- 1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (“NOT”) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
- 2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor’s or subcontractor’s certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
- 3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the regulated, traditional land use control MS4 (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

- a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..
 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
 6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.
3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

- b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and
 - d. to document the final construction conditions.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
- c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
 - k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
 - Certified Professional in Erosion and Sediment Control (CPESC),
 - New York State Erosion and Sediment Control Certificate Program holder
 - Registered Landscape Architect, or
 - someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
- a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice*” certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.
 - e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
 4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
- f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- k. Identification and status of all corrective actions that were required by previous inspection; and

- I. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

- b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “MS4 Acceptance” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.
5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
- a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:
 - a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for “*Commence (Commencement of) Construction Activities*” and “*Larger Common Plan of Development or Sale*” also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment – means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer – means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and *Extreme Flood* (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

<p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none">• Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E• Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E• Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen.
<p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <p>All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.</p>
<p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none">• Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains• Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects• Pond construction• Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover• Cross-country ski trails and walking/hiking trails• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.• Slope stabilization projects• Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

**Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development conditions*
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

**CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

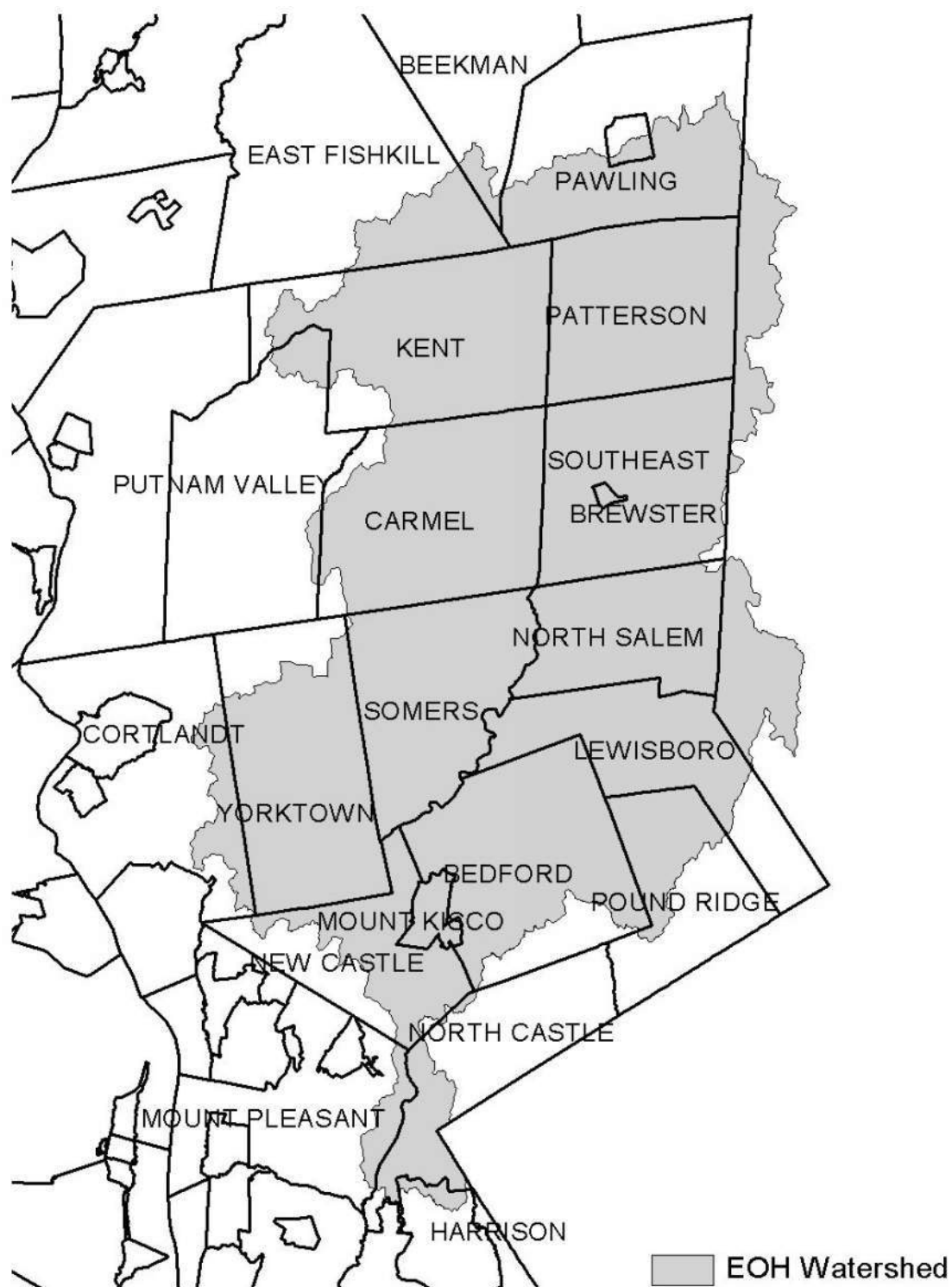
Figure 1 - New York City Watershed East of the Hudson

Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

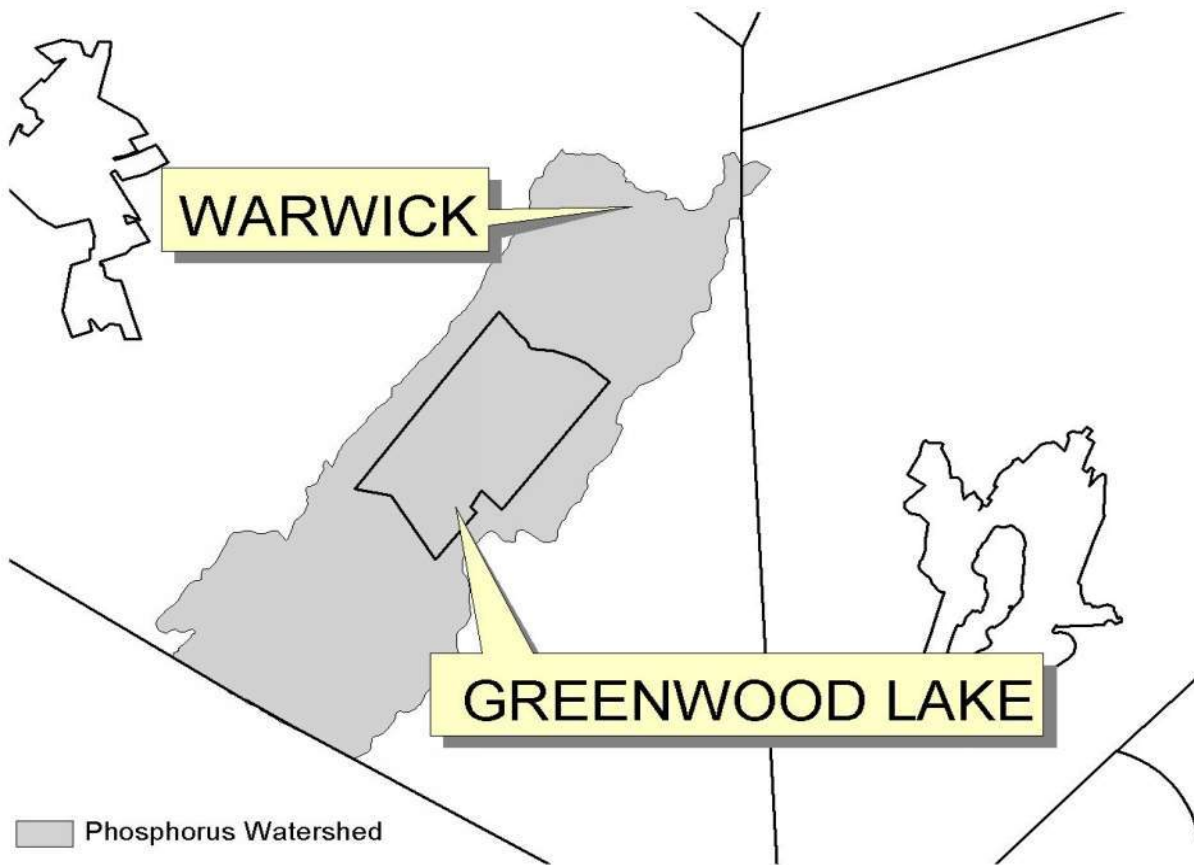


Figure 4 - Oscawana Lake Watershed

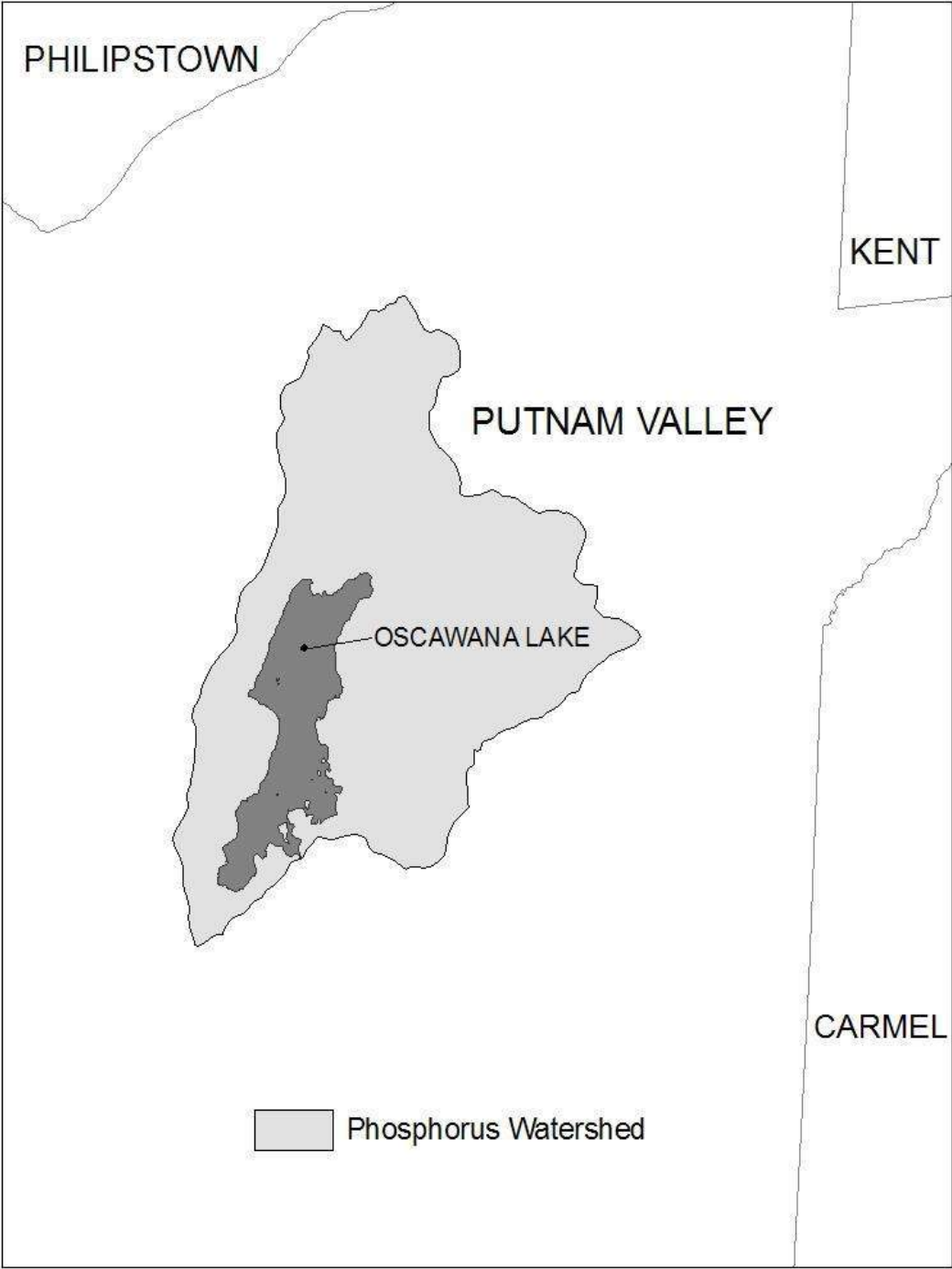
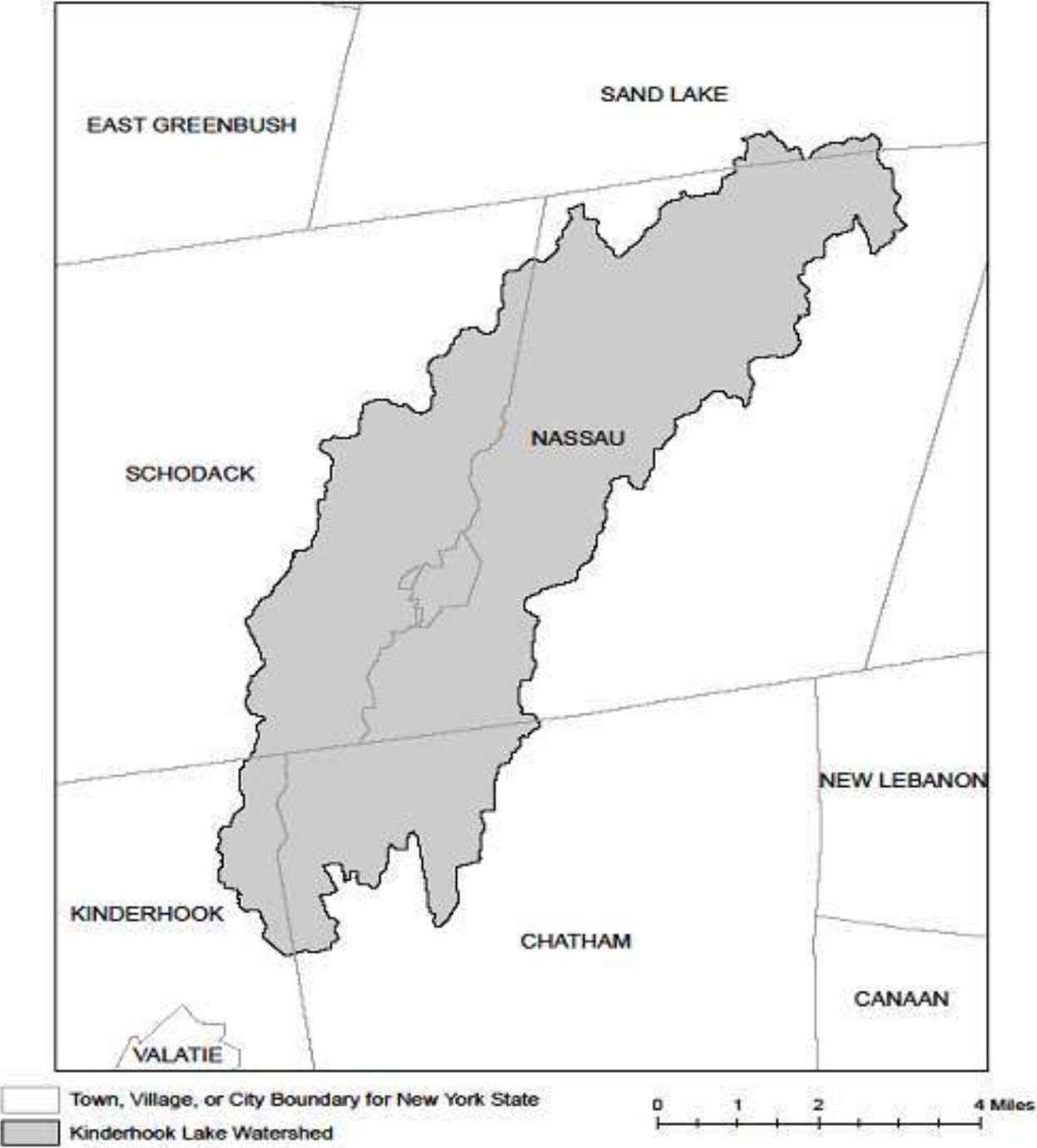


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C
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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

NOI for coverage under Stormwater General Permit for Construction Activity



Alternate ID Robert J. Stansky Memorial Complex **Submission** HP8-92RH-CXV3E **Revision** 1 **Form Version** 1.29

Review

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

Please note: Any work you perform filling out a form will not be accessible by NYSDEC staff or the public until you actually submit the form in the 'Certify & Submit' step.

OWNER/OPERATOR INFORMATION

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)

Canisius High School

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Carver

Owner/Operator Contact Person First Name

Matthew

Owner/Operator Mailing Address

1180 Delaware Avenue

City

Buffalo

State

NY

Zip

14209

Phone

716-882-0466

Email

carver@canisiushigh.org

Federal Tax ID

None Specified

PROJECT LOCATION**Project/Site Name**

Robert J. Stansky Memorial Complex

Street Address (Not P.O. Box)

2885 Clinton Street

Side of Street

West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

West Seneca

State

NY

Zip

14224

County

ERIE

DEC Region

9

Name of Nearest Cross Street

French Road

Distance to Nearest Cross Street (Feet)

1400

Project In Relation to Cross Street

South

Tax Map Numbers Section-Block-Parcel

124.10-2-17.11

Tax Map Numbers*None Specified***1. Coordinates**

Provide the Geographic Coordinates for the project site. The two methods are:

- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates

Latitude	Longitude
42.8634259	-78.77398699999999

PROJECT DETAILS**2. What is the nature of this project?**

Redevelopment with increase in impervious area

3. Select the predominant land use for both pre and post development conditions.**Pre-Development Existing Landuse**

Recreational/Sports Field

Post-Development Future Land Use

Recreational/Sports Field

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.*None Specified*

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage) within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)

26.50

Total Area to be Disturbed (acres)

16.13

Existing Impervious Area to be Disturbed (acres)

5.12

Future Impervious Area Within Disturbed Area (acres)

6.17

5. Do you plan to disturb more than 5 acres of soil at any one time?

Yes

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)

0

B (%)

100

C (%)

0

D (%)

0

7. Is this a phased project?

No

8. Enter the planned start and end dates of the disturbance activities.**Start Date**

6/1/2021

End Date

12/31/2021

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Buffalo Creek

9a. Type of waterbody identified in question 9?

Stream/Creek On Site

Other Waterbody Type Off Site Description*None Specified*

9b. If "wetland" was selected in 9A, how was the wetland identified?

None Specified

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?

No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?

No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?

Yes

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?

None Specified

If Yes, what is the acreage to be disturbed?

None Specified

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

Yes

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

No

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Town of West Seneca

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?

No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?

No

19. Is this property owned by a state authority, state agency, federal government or local government?

No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)

No

REQUIRED SWPPP COMPONENTS

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?

Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?

Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?

Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

Registered Landscape Architect (R.L.A)

SWPPP Preparer

Appel Osborne Landscape Architecture

Contact Name (Last, Space, First)

Belding, Brittany

Mailing Address

102 West Division Street, Suite 100

City

Syracuse

State

NY

Zip

13204

Phone

3154761022

Email

bbelding@appelosborne.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

- 1) Click on the link below to download a blank certification form
- 2) The certified SWPPP preparer should sign this form
- 3) Scan the signed form
- 4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

SWPPP Preparer Form.pdf

Comment

None Specified

EROSION & SEDIMENT CONTROL CRITERIA**25. Has a construction sequence schedule for the planned management practices been prepared?**

Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:**Temporary Structural**

Dust Control

Silt Fence

Stabilized Construction Entrance

Storm Drain Inlet Protection

Biotechnical

None

Vegetative Measures

Mulching

Protecting Vegetation

Seeding

Sodding

Topsoiling

Permanent Structural

Rock Outlet Protection

Land Grading

Other

Concrete washout facility, temporary sediment filter bag

POST-CONSTRUCTION CRITERIA*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.****27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.**

Preservation of Undisturbed Area

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)

.049

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)

0.041

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?

No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)

0.013

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

Yes

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)

0.466

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

0.508

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?

Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)

0.4605

CPv Provided (acre-feet)

0.4786

36a. The need to provide channel protection has been waived because:*None Specified***37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.****Overbank Flood Control Criteria (Qp)****Pre-Development (CFS)**

21.918

Post-Development (CFS)

4.546

Total Extreme Flood Control Criteria (Qf)**Pre-Development (CFS)**

64.263

Post-Development (CFS)

15.898

37a. The need to meet the Qp and Qf criteria has been waived because:*None Specified***38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?**

Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Canisius High School

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.

Project scope includes new baseball fields with asphalt pathways to for access. One field is full artificial turf and the other has an artificial turf infield with a natural grass outfield.

POST-CONSTRUCTION SMP IDENTIFICATION

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)

None Specified

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)

None Specified

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

None Specified

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

None Specified

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)

None Specified

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)

None Specified

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)

None Specified

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)

None Specified

Total Contributing Impervious Acres for Vegetated Swale (RR-5)

None Specified

Total Contributing Impervious Acres for Rain Garden (RR-6)

None Specified

Total Contributing Impervious Acres for Stormwater Planter (RR-7)*None Specified***Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)***None Specified***Total Contributing Impervious Acres for Porous Pavement (RR-9)***None Specified***Total Contributing Impervious Acres for Green Roof (RR-10)***None Specified***Standard SMPs with RRv Capacity****Total Contributing Impervious Acres for Infiltration Trench (I-1)**

0.47

Total Contributing Impervious Acres for Infiltration Basin (I-2)*None Specified***Total Contributing Impervious Acres for Dry Well (I-3)***None Specified***Total Contributing Impervious Acres for Underground Infiltration System (I-4)***None Specified***Total Contributing Impervious Acres for Bioretention (F-5)***None Specified***Total Contributing Impervious Acres for Dry Swale (O-1)***None Specified***Standard SMPs****Total Contributing Impervious Acres for Micropool Extended Detention (P-1)***None Specified***Total Contributing Impervious Acres for Wet Pond (P-2)**

5.43

Total Contributing Impervious Acres for Wet Extended Detention (P-3)*None Specified*

Total Contributing Impervious Acres for Multiple Pond System (P-4)*None Specified***Total Contributing Impervious Acres for Pocket Pond (P-5)***None Specified***Total Contributing Impervious Acres for Surface Sand Filter (F-1)***None Specified***Total Contributing Impervious Acres for Underground Sand Filter (F-2)***None Specified***Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)***None Specified***Total Contributing Impervious Acres for Organic Filter (F-4)***None Specified***Total Contributing Impervious Acres for Shallow Wetland (W-1)***None Specified***Total Contributing Impervious Acres for Extended Detention Wetland (W-2)***None Specified***Total Contributing Impervious Acres for Pond/Wetland System (W-3)***None Specified***Total Contributing Impervious Acres for Pocket Wetland (W-4)***None Specified***Total Contributing Impervious Acres for Wet Swale (O-2)***None Specified***Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)****Total Contributing Impervious Area for Hydrodynamic***None Specified***Total Contributing Impervious Area for Wet Vault***None Specified***Total Contributing Impervious Area for Media Filter***None Specified*

"Other" Alternative SMP?*None Specified***Total Contributing Impervious Area for "Other"***None Specified***Provide the name and manufacturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.****Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.****Manufacturer of Alternative SMP***None Specified***Name of Alternative SMP***None Specified***OTHER PERMITS****40. Identify other DEC permits, existing and new, that are required for this project/facility.***None***If SPDES Multi-Sector GP, then give permit ID***None Specified***If Other, then identify***None Specified***41. Does this project require a US Army Corps of Engineers Wetland Permit?***No***If "Yes," then indicate Size of Impact, in acres, to the nearest tenth***None Specified***42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.***None Specified***MS4 SWPPP ACCEPTANCE****43. Is this project subject to the requirements of a regulated, traditional land use control MS4?***Yes - Please attach the MS4 Acceptance form below*

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

None Specified

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.

MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload

No files uploaded

Comment

None Specified

OWNER/OPERATOR CERTIFICATION

The owner/operator must download, sign, and upload the certification form in order to complete this application.

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

No files uploaded

Comment

None Specified

At least one file is required.

https://nform-prod.dec.ny.gov/app/#/submissionwizard/34baeeb2-d5b6-4704-b06f-eb4401e66c21/11

15/15



**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

**MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form
for**

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A _____

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

(NYS DEC - MS4 SWPPP Acceptance Form - January 2010)

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).

Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes
☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)